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# THE IRON AGE

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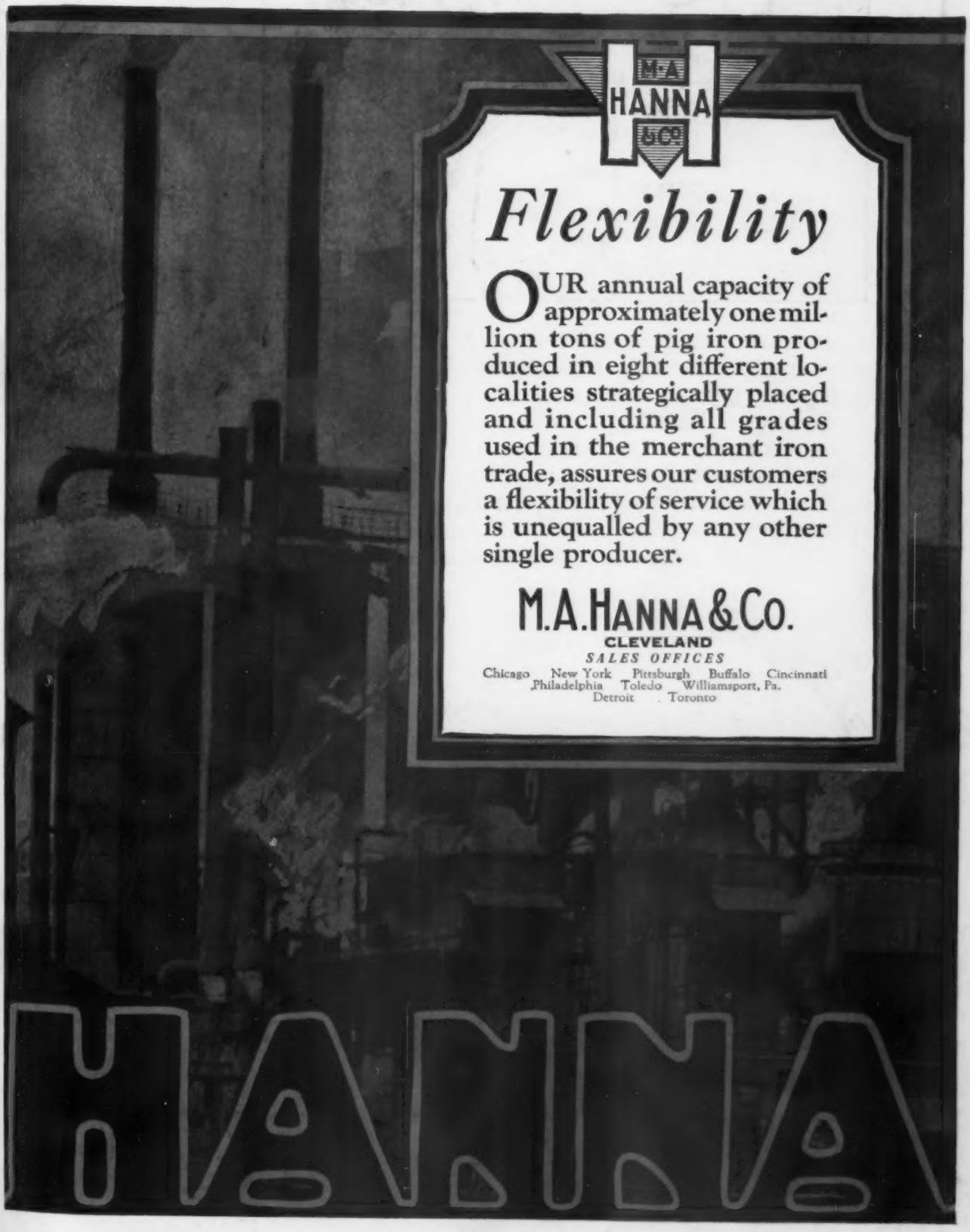
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# RYERSON STEEL-SERVICE

# THE IRON AGE

New York, April 20, 1922

ESTABLISHED 1855 VOL. 109, No. 16

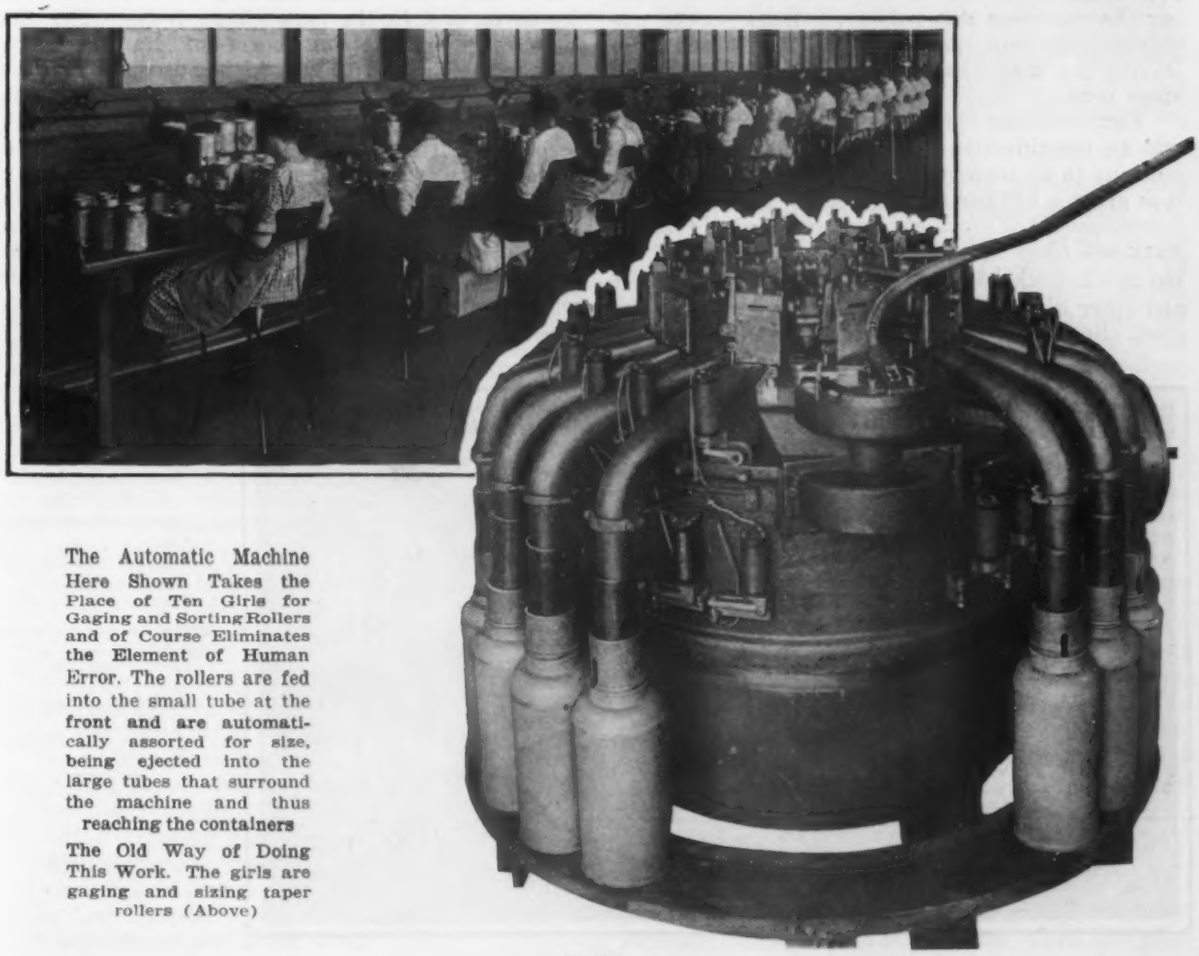

# Automatic Machines Replace Hand Labor

## Element of Human Error Eliminate and Production Costs Reduced with Special Equipment at the Plant of the Bock Bearing Co., Toledo

IMPORTANT progress has been made by the Bock Bearing Co., Toledo, Ohio, in developing special equipment for use in the manufacture of taper roller bearings. The making of these bearings requires production work to close limits in machining of parts, careful inspection during machine operations and close inspection for size after the parts are completed, as well as careful inspection of the raw material. The aim of the company is to design machinery, automatic in operation, that will eliminate the human error as much as possible in the manufacture and inspection of the bearing parts, thus improving the quality of the bearings and at the same time effecting a reduction in manufacturing costs.

Probably the most interesting development of the company up to the present time is a gaging machine for inspecting the taper rollers for size and automatically sorting them. The rollers are fed into the machine in all sizes and are discharged from it into receptacles, each one of which receives the rollers of a certain size.

The taper roller bearing consists of three main parts, an inner race or cone, an outer race or cup and the cage in which the rollers are assembled and which holds them in alignment. While it has been the practice to make the cage of several parts, consisting of two outer rims and with as many connecting sections as there are rollers, the company has recently developed a one-piece cage, stamped



**The Automatic Machine Here Shown Takes the Place of Ten Girls for Gaging and Sorting Rollers and of Course Eliminates the Element of Human Error.** The rollers are fed into the small tube at the front and are automatically assorted for size, being ejected into the large tubes that surround the machine and thus reaching the containers

**The Old Way of Doing This Work.** The girls are gaging and sizing taper rollers (Above)

from strip steel, that is said to be more easily adjusted and to have other features that make the bearing a better product from the service standpoint.

The predominating field for the use of taper roller bearings is the automotive industry, but bearing manufacturers look for the development of other important outlets for their product. Among other uses the Bock company has supplied bearings for machine tools, for journal bearings for railroad cars and for elevators.

The main manufacturing building of the Bock company is a four-story structure, three floors of which are used for machine operations and for grinding and the fourth floor for roller inspection and gaging, the cage stamping department, finished stock room, assembly department and shipping department. The heat treating department is located in an adjoining building.

All parts of the bearing except the cage are made of chrome-nickel steel. The bearings are manufactured in sizes from 1¾ to 12 in. outside diameter. Cups and cones having a bore of 1¼ in. or less in diameter are made from bar stock. If the bore is over 1¼ in. in diameter, the cups and cones up to 5½ in. in outside diameter are made of seamless steel tubing. Those having a larger outside diameter are made from forgings. Cold drawn chrome-nickel steel is used for making the rollers. The parts of the cage are stamped from cold-rolled carbon strip steel in gages from 0.05 in. up to 0.12 in.

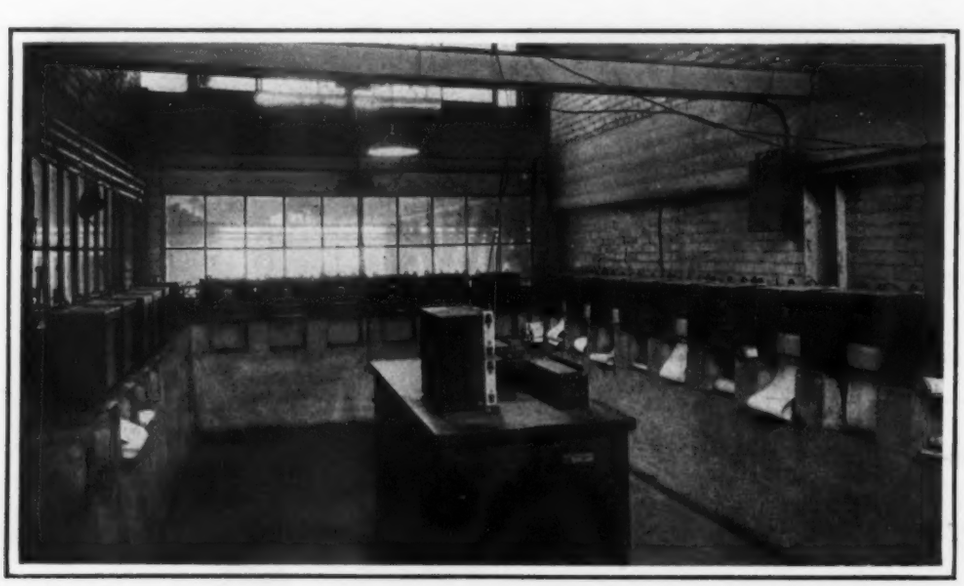
Cups and cones up to 5½ in. outside diameter are made on automatic screw machines on the second floor, all that floor being used for this department. The stock in the form of bars and tubing is received in 10 and 12 ft. lengths. A one-ton hand hoist operated on a monorail track back of each row of machines delivers the stock to racks adjoining the machines and hoists the stock to the machines. All work is handled in tote boxes after leaving the machines until it reaches the finished stock room.

Each machine operator's work is kept separate and an identification tag accompanies it from the machine to an inspection room on this floor. Here it is given a 100 per cent inspection to see if a sufficient amount of stock has been removed so that the work will clean up in grinding, and to see that not too much stock has been removed for size of bore and other dimensions, as well as for defects in the steel. Special gages are provided for all inspections of dimensions. Before leaving the inspection department there is stamped on the face of the cup and cone the company's name, the number of the bearing and symbol marks indicating the year and month the bearing was made and the analyses of the steel used in its manufacture. This is done on a punch press with a specially designed marking fixture.

Rollers in various sizes are machined on one side of the third floor and cups and cones having an outside diameter of over 5½ in. made from forged blanks are machined on the opposite side. The former are made from bar stock ¼ to 1⅜ in. in diameter on standard automatic screw machines, one man and helper operating six machines. Large cups and cones made from forgings are produced on semi-automatic machines, one man and a helper operating four machines. Before the cold drawn steel used for making the rollers goes to the automatic machines, each bearing is numbered and a 2-in. piece is cut off. This sample is carbonized and hardened and then broken and inspected for pipe and seams. If defects appear the piece from which the sample is taken is rejected. This inspection of the sample after heat treatment and the rejection of the steel found defective is a protection against the danger of having rollers crack while in service. Before the forgings are machined the blanks are given a special heat treatment to make sure that the steel has the proper structure. After machining the large cups and cones formed from forged blanks are given the regular heat treatment.

The heat treating department is equipped with eight double door heat treating and hardening furnaces and thirteen carbonizing furnaces, all gas fired. These furnaces were designed by the company. Cups and cones and rollers are first carbonized, being left in the furnace 12 to 18 hr. at a temperature of about 1700 deg. and are then allowed to cool in the carbonizing boxes. For the most part, carbonizing boxes of standard size, 10¼ x 10¼ in. and 12 in. high are used. A furnace chamber has a capacity of holding 44 of these boxes.

After carbonizing the parts are heat treated to refine the core and to add to the toughness, being kept in the furnace from 1 to 2 hr., depending on the size of the parts, at a temperature from 1425 to 1475 deg. Following quenching, they are given another heating, after which they are quenched in water. After the final hardening the parts are tempered in oil tanks to relieve the metal of strain.



The Pyrometers Are Located Around the Side of the Recording Instrument Room and on the Pedestal in the Center Are Potentiometers

At the Left Is Shown the Automatic Screw Machine Department Where the Smaller Cups and Cones Are Made. Back of each row is a monorail on which stock is brought to the machines with a hand hoist

The Tool Room (Below) Where Special Tools and Gages as Well as Special Machinery Are Made

In the Inspection Room of the Grinding Department the Outside Diameter of Cups or the Outer Races Are Being Inspected and Sized

The Cup and Cone Grinding Department Is Shown at Right

Four thermocouples are connected to each furnace, and it is stated that these never show a variation of over 10 deg. in the temperature in different parts of the furnace. Temperatures are recorded with Leeds & Northrup recording pyrometers. Control light signals are located in front of each furnace. Extreme care is taken to insure the proper heat treatment of all the work. After each heat is removed from the furnace the pyrometer record is checked, and if it shows that the work has not been given the proper treatment, the heat is segregated and is later given another heat treatment. Samples are placed in each heat and these are broken for examination.

After the final tempering in oil the work, except that made from forgings, is sand blasted in a Pangborn sand blast machine, which removes the dirt and scale and makes the parts ready for grinding. The use of the sand blasting machine has been substitued for tumbling barrels for this work, but the latter are still being used for cleaning the large cups and cones made from forgings.

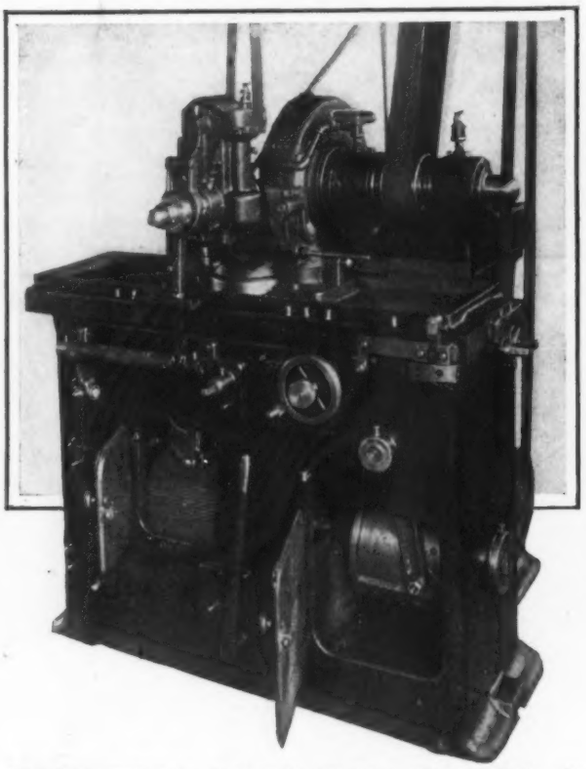
One side of the first floor is used for grinding cups and cones and the other side for grinding rollers. All grinding on cups and cones is done on standard grinding machines, equipped with special holding fixtures. These permit the quick handling of the work in and out of the machines, an important time saving factor when grinding machines are engaged in production work.

The first grinding operation in the cup and cone department is the grinding of the back face. The back face then becoms a true locating point for the remainder of the grinding operations. These on the cup are the bore and outside diameter and on the cone they are the bore, outside diameter and apex. All these surfaces must be concentric. After the back is faced every piece is given the scleroscope test for hardness. Floor inspection is maintained in the grinding department, and after the last grinding operation the work is given a so-called 100 per cent inspection. The cups and cones are then immersed in a tank of hot oil to remove the moisture and to prevent rusting, and they are ready for the finished stock room.

In the roller grinding department full automatic machines of a special type are used for grinding the taper on the rollers. The rollers are automatically feed into the machine through a hopper and the machines grind the rollers at the rate of 14 per minute or twice as fast as the semi-automatic machines previously used. All this machine grinding is done within the limits of 0.0002 in. for both round and taper. Each old type machine required one operator but with the new type of roller grinder machine five machines are operated by one man and a helper.

For grinding the spherical head on the roller the company has developed an automatic head grinding machine. This machine takes the place

of a hand operated radius grinder, and in addition to increasing production with less labor, it is stated that it does more accurate work, insuring an accurately ground head that is true in respect to the body of the taper. It also eliminates the necessity of polishing the head. The roller is automatically fed from a hopper into a collet and is chucked into position so as to grind a given and equal amount from each head. A table carries the work head to the grinding wheel which is dressed



Recently Designed Automatic Machine That Grinds the Spherical Head on the Rollers. It takes the place of hand operating radius grinders, doing the work accurately and economically

to the proper radius for the roller that is being ground. Then the work head swings on the center of the radius on which the roller is to be ground. As the work head is carried back to the feeding point the roller is automatically discharged. One man and a helper operate five of these machines.

After the two grinding operations the rollers are tumbled in a tumbling barrel with chamois, which removes the dust and polishes the parts. After tumbling they are ready for inspection and gaging. Under the practice that has prevailed, rollers are inspected under a magnifying glass and any having rough grinding marks or other defects are thrown out. Under the hand gaging method the rollers are sized by hand under an amplifying gage, the work being placed on a taper block under the gage. In this hand inspection the rollers are gaged for size and form. Those that are not perfectly round or are off taper are thrown out and the perfect rollers are sorted for sizes during this inspection.

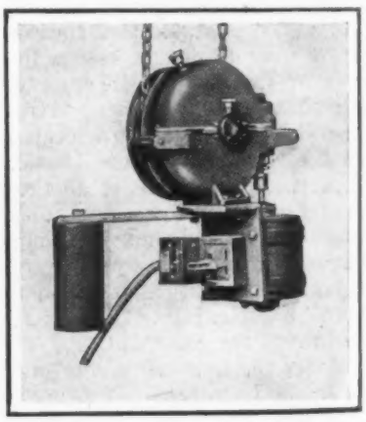
The new gaging machine previously referred to takes the place of the hand inspection. This machine is built on a circular base and mounted on the inside of the base is a revolving table which carries ten gages. Around the outside of this base nineteen discharge tubes are mounted and at the front of the machine is a feeder. As a gage passes the feeder a roller is inserted into the gage and is automatically gaged for size and is carried around in the gage until it reaches the one of the nineteen discharge tubes that corresponds to its size. When it reaches the proper tube, it is automatically ejected from the gage and passes through the tube into a container, a separate container being located below each tube. At the first discharge point, all rollers over the maximum size are discharged. At the following seventeen discharge points, the rollers are discharged according to size, starting with the maximum sized roller at the second point and so on down to the last discharge point at which the smallest size is discharged. The machine gages the size of the rollers very accurately or within limits of 0.0002 in. Consequently, that is the greatest variation in the size of the rollers deposited in any one container. The rollers are fed into the feeding tube by hand but it is the intention to arrange a hopper feed. The machine has a capacity of 3000 rollers per hour and does the work that has heretofore required ten girl inspectors.

A tool room is located on the ground floor of an adjoining building. In this gages and special machinery are built. Johansson gages are used as standards for measurement. A Pratt & Whitney measuring machine is also provided for measuring gages, etc. A master part is used for the checking of tools and gages. All gage angles are arrived at by the use of master angle finders. These consist of an arbor and two disks, each at the required angle, and a finder is provided for every angle. These are of ample length so that any slight error that might occur is virtually eliminated. A chemical laboratory is provided for checking up the analyses of incoming material and for experimental purposes and there is a physical laboratory for testing steel and bearings, including a break down test for the latter.

## Power Attachment for Hand Hoists

For use in connection with hand-power hoists of 5 tons capacity and larger, the New Jersey Foundry & Machine Co., 90 West Street, New York, has developed the electric appliance illustrated, which weighs 160 lb.

It can be hung in the bight of the operating chain and will overhaul 138 ft. of chain per min. It is said to provide a chain pull of 130 lb. and the outstanding



Electric Appliance for Hand Power Hoists of 5-Ton Capacity and Larger. Rated to overhaul 138 ft. of chain per minute

advantage emphasized is that it provides a load-lifting speed approximately four times that obtainable by hand power and requires but one man to operate it.

Current is supplied by a flexible conductor from convenient sockets or suspended from the hoist, if it is more desirable to bring feeders to that point. It is equipped for operation on both alternating and direct current. Gears are hardened and run in oil.

The building housing the erecting department of the Shiffler tower plant of the American Bridge Co., Fifty-first Street and Allegheny Valley Railroad, Pittsburgh, was destroyed by fire on the night of April 13.

# Trade Associations Confer in Washington

## Representatives of Approximately 400 Organizations Meet with Government Officials—Co-operation of Government with Business the Keynote

WASHINGTON, April 18.—The outstanding result of the meeting last Wednesday of approximately 400 representatives of trade associations with Secretary Herbert Hoover and other officials of the Department of Commerce was the clearer conception obtained by the trade association representatives as to the purposes the Department officials are trying to accomplish. This purpose relates to co-operation between the Government and industries of the country, with the trade associations serving as the media, to promote trade, and improve practices both for the benefit of business and the public.

It was pointed out by Secretary Hoover, who presided at the conference, that in the reorganization of the Department of Commerce it has been sought to cooperate with industrial and commercial organizations, agriculture and labor in the promotion of marketing abroad, in employment, in transportation, in elimination of wastes and improving of industrial technology, in statistical services and in many other directions, thus making the Department become of far greater real service to the whole public.

"These problems become practical problems of day-to-day contact with commerce and industry," the Secretary stated, "if we would learn the direction in which real service can be acccomplished." He stated that such contact can only be secured through trade and industrial organizations, for without organization there can be no representation. He held that legitimate trade association is vital and should be encouraged. He made it plain, however, that it was not within the province of the Department to attempt to interpret the legal rights of trade associations and stated plainly that he did not propose to engage in any such attempt. Apparently this was brought out to remove any misunderstanding as to the object of the conference, which was called largely at the suggestion of trade association representatives.

Throughout the day, the meeting which was held in the auditorium in the Department of the Interior, was addressed by Government and trade association representatives, and numerous suggestions looking to the closer co-operation between the Government and trade associations were made. Some of these related to purely legal questions, and while they were interesting, and held by the conference to be constructive, it was conceded that they were outside of the purpose of the conference.

Informal opinion also was strongly in favor of a proposal introduced in Congress by Senator Edge and Representative McArthur, for a joint congressional inquiry for the purpose of considering legislation defining the rights of trade associations. Senator Edge addressed the conference in support of this legislation, but explained that his resolution had failed of unanimous agreement for consideration and had been laid over. Secretary Hoover in opening the conference had pointed out that it was called at the request of many associations which wish to present views upon their relations to the development growing out of the correspondence addressed by the Secretary to Attorney General Daugherty with respect to certain questions for the guidance of the Department of Commerce and its relation to various functions of associations.

### Reiterates Attitude Regarding Open Price Association

The Secretary said the Department cannot interpret the law and has no intention of doing anything of the kind, and obviously, cannot establish co-operative relations with the associations which maintain types of practice that have been condemned by the courts. Beyond this, he said, there are some two or three functions carried on by a small minority of trade associations the legality of which has been questioned but not yet determined. These are in the main the so-called open price associations which are collecting data on prices and sales of individual association members and circulating such individual data again to members, together with certain other activities. The Secretary said frankly that officers of the Government do not believe these functions are in public interest, whether they are used in violation of the law or not.

He reminded the conference that the Department laid down the rule nearly a year ago that it could not cooperate with the associations subject to such criticism, and it sees no reason to change it. This statement in substance was incorporated in a letter addressed by the Secretary to Samuel Untermyer in reply to a criticism Mr. Untermyer made in a letter to Mr. Hoover in which the former suggested that the Secretary desist from co-operative work between the Department of Commerce and trade associations. Mr. Hoover said that far from extolling the so-called open price associations the Department has consistently stated that it cannot and does not approve of them on economic grounds. He pointed out that whether legal or illegal, they constitute less than 10 per cent of the trade associations of the country. It was apparent that Mr. Untermyer had gathered a misconception of statements of the Department on its economic views and relations to trade associations.

### Congressional Inquiry into Association Question Favored

The labor unions solved this matter, the Secretary stated, in securing legislation giving them practical immunity from the restraint of trade laws and lately the farmers have done the same. The commercial and manufacturing community, the Secretary said, has not asked for more than some interpretative help in connection with the question of the twilight zone of trade restraint. The Federal Trade Comission, the Secretary explained, was originally conceived in the sense of providing some measure of interpretation of the law, but these provisions were largely stricken from the original legislation. The Secretary said he thought it would be in public interest if the experience of recent years were inquired into by a committee such as is suggested by the resolution of Senator Edge and Representative McArthur.

Chairman Gaskill of the Federal Trade Commission, in addressing the conference, suggested that the Government should adopt, first, an affirmative statement of the principles of the competitive system; and, second, should provide for the regulation of business contemporaneous with, rather than after, accomplishment of an event alleged to be unlawful.

"Business pirates are always on hand," said Mr. Gaskill, "who will not follow the principles of right and who are both enemies of the Government and enemies of the rest of industry. The Government and business are one, properly and when they unite there will be the greatest advance the United States has ever known."

Senator Edge, whose resolution, it is learned, was drawn by Government attorneys and experts, stated that his office had been flooded with correspondence of approval. "Business wants, more than anything else, as I see it, to know just where it is," said the Senator. "That is just the purpose of my resolution, to advise business through the trade associations how far they can go in helping themselves without infringing upon the Sherman anti-trust law. After the Hardwood Lumber decision by a divided court, business and industry now do not know what to do." The senator declared that industry should have the help of Congress

to the extent expressed in his resolution, so that essential confidence in business may be restored.

**Suggestions from Association Representatives**

Suggestions brought out during the course of discussion by various trade association representatives included the following:

The setting up of a tribunal to pass upon the legality of trade associations and when it is found that they are infringing upon the law they should be ordered to cease the questioned practices.

Repeal of the Sherman law, though it was conceded that this is not likely to be seriously considered.

Empowering the Federal Trade Commission to license and regulate all trade associations and prescribe definitely and clearly what such associations may or may not do and to prevent organization of all associations not so licensed.

Permitting trade associations to gather information, subject to restrictions of law against agreements and understandings in restraint of trade as developed by courts, and subject also to the provision that such information shall at the same time be tabulated and published and made available alike to producers and consumers.

The suggestion for the setting up of a Government tribunal to pass upon the activities of associations with regard to their legality was made by C. H. Scovell of the accounting and engineering concern of Scovell, Wellington & Co., who addressed the conference as a representative of several associations in the metal working industry. Mr. Scovell said there is an impelling need for every trade association to make a thorough survey of its particular industry in order to find its individual problems, and suggested that the problems then should be brought before the Department of Commerce for help in their solution. In endorsing the Edge resolution, he suggested an amplification providing that when an association's plan of operation is approved by the proposed Government tribunal, its operation should not be penalized in case the plan develops into illegality, but should be subject only to an order to stop the practice that had been made the object of complaint.

Suggestions relating to repeal of the Sherman law, the empowering of the Federal Trade Commission to license and regulate trade associations and the permitting of trade associations to gather information desired, subject to restrictions of the law against agreements, etc., came from E. J. Cornish, chairman of the statistical committee of the National Paint, Oil and Varnish Association. He declared that without doubt the Sherman law has removed two of the most frequent inducements to price cutting.

"Under free conditions," he said, "competitors do not cut prices just to be competing; they do so because they believe it to be advantageous." One frequent inducement to price cutting, it was pointed out, was to reduce the profit in the industry to such an extent that the competitor's properties can be bought at less than their value. "Another inducement to price cutting," said Mr. Cornish, "is to demoralize business to such an extent that competitors will buy out the price cutter—not at the proper value, but at the 'nuisance value' of his properties. The Sherman law effectively removed these two inducements to price cutting."

He said that inasmuch as the public believes the Sherman law advantageous, however, its repeal is not likely to be seriously considered. He said that while empowering the Federal Trade Commission to license and regulate all trade associations would constitute a centralization of power in a governmental body that is theoretically objectionable, it might be much more satisfactory than to be subjected to the interference of several Federal departments and of many States. In commenting upon the suggestion to permit trade associations to gather information desired, with the legal restrictions as proposed, Mr. Cornish said the data should be made available alike to producers and consumers. He declared that publicity would prevent any association's doing anything deserving of consure.

**Compulsory Reporting of Basic Statistics**

Because of the necessity of some statistics from certain industries which are not now received by the Government, there also is a suggestion that legislation be introduced compelling the reporting of such data as to production, distribution, stocks and consumption. It has been plainly indicated that this action may be taken.

In his closing talk to the conference in the afternoon, Secretary Hoover announced that as to the details of trade practices, problems, etc., which enter into the question of the status of trade associations, and which will constitute the subject of co-operation between associations and the Department of Commerce, it will be best to handle these matters by correspondence from individual associations with the Department. These data relate principally to collection, character and distribution of trade statistics.

**Price Information Regarded of Secondary Importance**

There was a general sentiment throughout the conference that price information was of relatively little importance, inasmuch as competitors generally have this information before it could be compiled and supplied to the Government. Doubt had been expressed by some speakers whether the Department of Commerce could prepare statistical data in time to be useful. Mr. Hoover said he did not see a problem in this question. He said the material could be prepared and given expeditious handling by the several branches of the Department of Commerce throughout the country. The Secretary said that the study of trend production and consumption, which, he pointed out, is far from the restraint of trade, is absolutely necessary.

Dr. Julius Klein, director of the bureau of foreign and domestic commerce, told of the good work done in connection with foreign trade by use of data obtained through trade associations. Director of the Census W. M. Steuart spoke of the inadequacy of information now furnished by industries and expressed hope for improvement through a greater volume of vital statistics by the associations.

Co-operation with the Government was urged by practically all the speakers, among them being E. F. Du Brul, general manager of the National Machine Tool Builders' Association, Cincinnati; Nathan B. Williams, assistant general counsel, National Association of Manufacturers, Washington; E. S. Butterworth, National Association of Foreign Equipment Manufacturers, Moline, Ill.; George D. McIlvaine, secretary of the Association of Trade Association Executives, Cleveland; E. W. McCullough, United States Chamber of Commerce, Washington; and L. C. Boyle, general counsel for the National Lumber Manufacturers' Association, of Washington.

These speakers agreed with sentiments expressed by Secretary Hoover to the effect that it will be possible to demonstrate that activities of trade associations have resulted in great savings in cost of production and distribution, amounting to enormous sums of benefit to both producer and consumer; that costs of distribution and manufacture have greatly increased due to added taxation and other unavoidable burdens, and that if these charges are to be reduced and the farmers enabled to buy more, and if employment is to be increased, it is necessary to advance in every direction to further decrease these costs and eliminate wastes that can be found. Agreement also was expressed, with the sentiment of Secretary Hoover, that the trade association in membership is predominantly made up in small establishments and that little business can only hope to be equally informed with big business and make equal efforts to promote welfare work through trade associations.

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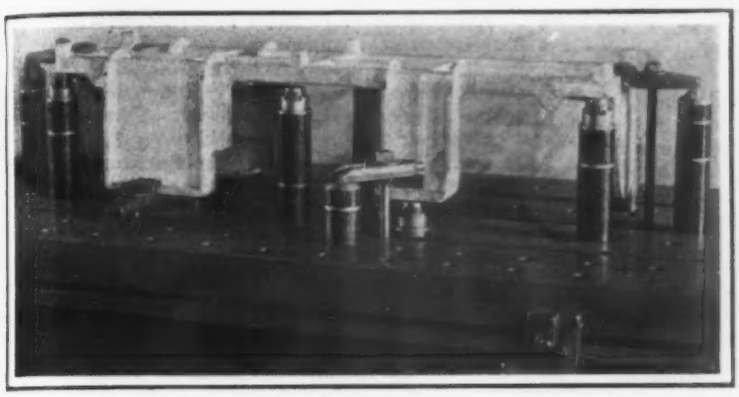
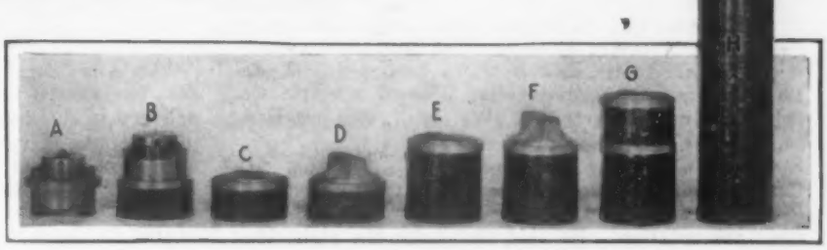
The Atlas Car & Mfg. Co., Cleveland, has just completed a Government order for 24 trucks for carrying the doors of the new balloon hanger at Scott Field, Ill. These are six-wheel trucks of standard gage, 12 ft. long. The hanger has four doors, two on each side. These are 160 ft. high and are built up of steel each weighing approximately 325 tons. Each door is supported on six trucks arranged in two rows. The doors will move back and forth like a door suspended from an ordinary door hanger. The trucks are driven by a 20 hp. motor geared down to a speed of 10 ft. per minute.

## Machine Shop Accessory Equipment

Recent new offerings in accessory machine shop equipment include the Casler T-slot nuts, jacks and blocks shown in the accompanying illustrations, which have been placed on the market by the Marvin & Casler Co., Canastota, N. Y.

The T-slot nut shown is made in various sizes for use on all classes of work from small milling machine T-slots to heavy T-slots in planers and lrill presses. They are intended to save time in setting up and because of the ease with which the bolts may be added after the set up, they are said to save the expense entailed in the shifting of work during the process of machining. The nut shown presents ample wearing surface, cannot injure the T-slot and while it must be inserted from the end of the T-slot, the work need not be disturbed in adding one or more extra bolts at any time during the process of machining. The cost of bolt equipment is reduced because the studs used are easily made at minimum cost.






Extra T-Slot Nuts of Type Shown May Be Added without Disturbing the Work. An outfit of jacks and blocks is shown at the right, the use of the jacks and blocks in holding a large jig casting on a planer bed being shown above

Investigation of time lost in properly anchoring work to the table by the use of old style T-slot bolts will demonstrate, it is claimed, the economy both in machining and wear and tear on the T-slots by using the equipment illustrated. The T-slot nuts are machined so as not to injure T-slots by continual use. T-slot nuts of the following sizes are furnished without bolts or nuts:

| Size of Bolt | Width of Body | Width of Head | Depth of Body | Depth of Body | Length of Nut |
|---|---|---|---|---|---|
| ½ | ⅞ | 1 1/16 | ⅜ | ⅜ | 1½ |
| ⅝ | ⅞ | 1¼ | ⅜ | ⅜ | 2 |
| ¾ | ⅞ | 1½ | ⅜ | ⅜ | 2½ |
| ⅞ | 1 | 1¾ | ⅜ | ⅜ | 3 |
| 1 | 1 1/16 | 2 | ⅜ | ⅜ | 3 |

The jacks and blocks shown permit of various combinations and cover a wide range. The jacks provide a convenient means of leveling up the work and the blocks eliminate trips to the wood shop for wood blocking. The outfit consists of three elements, the jack, shown at A, the block and the pipe extensions shown at C, D, E, F, G and H.

The jack screw is made with a point as shown at A and a flat surface at the opposite end as shown at B, the screw being reversible to bring either end in contact with the work. The jack body is also reversible and has a flange to permit use with tubular extensions, as at C, D and E. The flange is so located and the tubular extensions of such length that when combined any height between maximum and minimum may be reached with the jack. When used without tubular extensions the jack has a minimum height of 1¾ in. using the point for supporting the work, and 1½ in. in using a flat surface for supporting the work. The screw has an extension of ⅝ in. and is of a pitch and diameter that will not run down when a chattering cut is taken on the machine.

When using two or more tubular extensions with the jack the extensions are held in position by one or more of the blocks shown at top of tubes C and D. The combination of block and extension giving minimum height is shown at C, the same pieces being shown at D but with block reversed and height increased ⅝ in. The next higher combination with block as at C but with longer tube is shown at E, this being ⅝ in. higher than D. Combination at F is ⅝ in. higher than E, and G combines two lengths of tubing with two blocks. A set of four tubes and four blocks is shown at H, the height being 19 in., this set being said to permit of making up 30 different combinations giving heights from 1⅜ in. to 19 in. in steps of ⅝ in.

The tubing is of 2 in. gas pipe with approximately 2⅜ in. outside diameter. It is made up in 1, 2¼, 4¾ and 9¾ in. lengths. The blocks when assembled as at C add ⅜ in. to height, and as at D, add 1 in.

## Canadian Plant Acquired

The Electric Steel & Metals, Ltd., plant at Welland, Ont., has been purchased by an American organization and all details in connection with the transaction have been settled and a contract for power has been arranged. The purchasers prefer to have their identity remain secret for a few days. It is, however, understood that the purchase price, together with additions to the plant, will involve an expenditure of upwards of $500,000. The plant has been standing idle since the munition industry was suspended. It is now proposed to turn the plant into a steel rolling mill for making bars, sheets, etc. Some of the present equipment will be used at the outset, but eventually it is proposed to install a compete set of new machinery and equipment. It is expected that the plant will be completed and in operation in about three months.

Leslie B. Moss, executive secretary, Dennison University, Granville, Ohio, speaker at the annual luncheon of the Pittsburgh Alumni, at the Hotel Chatham, Pittsburgh, April 8, stated that extensions and improvements at the university have been planned involving the expenditure of more than $1,000,000.

The Quinley Magnesia Co., operating a plant at Cortland, Trumbull county, Ohio, is extending its facilities to include the production of locomotive lagging and pipe covering. The company expects to get its new units in commission before mid-summer.

# INDUSTRY IN PICTURES

## Mr. Du Brul and Others Advocate New Plan of Extending Commerce

WASHINGTON, April 18.—Attended by more than 100 manufacturers and moving picture executives, a conference was held here last Saturday under the auspices of the National Association of Manufacturers and discussion given over to the question of production and distribution of industrial pictures as a vital form of promoting both domestic and foreign trade. Constructive results already obtained through this means of advertising American goods were pointed out by the various speakers and the conference displayed considerable enthusiasm toward the further encouragement of creating and presenting high class industrial motion pictures.

With a view to studying the subject further the conference named a committee which is to meet in New York on Thursday, April 27. This committee will receive a committee from producers, exhibitors or distributors of industrial motion pictures, or such written memoranda, data and suggestions as those interested in the subject may see proper to present. The committee from the association will report its conclusion on pertinent matters related to the general subject, both to the Department of Commerce and the annual convention of the association to be held in New York on May 8, 9 and 10. This committee consists of Nathan B. Williams, National Association of Manufacturers, Washington, chairman; E. F. Du Brul of Miller, Du Brul & Peters Co., Cincinnati, and also general manager of the National Machine Tool Builders' Association; W. A. Austin, the Baldwin Locomotive Works, Philadelphia; C. F. Bateholts, General Electric Co., Schenectady; and Arthur T. Waterfall, vice-president, Dodge Bros., Detroit.

In the course of his talk to the conference, Mr. Bateholts cited the experience of the General Electric moving pictures and the good results obtained from their presentation. He said that with the right kind of industrial motion pictures there can be no question about the demand for distribution. He declared that if they are properly made up they will meet a favorable response. The General Electric Co. has a distribution of 30,000 exhibitions annually in American theaters with an annual attendance of over 20,000,000 people. Mr. Du Brul expressed the belief that industrial motion pictures offer splendid possibilities in connection with the training of apprentices and workmen as to technical processes. Mr. Austin commented favorably on the potential influence of the industrial motion picture as a means of building up trade.

Mr. Williams expressed the conviction that those who in later years may come to study the development of the motion picture industry will mark the conference as one of its great days. He referred to a brief inquiry in the plans and methods now being used by manufacturers in the distribution of their pictures. He said: "Two outstanding facts were developed. Almost all manufacturers who had motion pictures, were not satisfied with their experiences in distribution. The other fact was that with almost complete unanimity manufacturers who had pictures expressed themselves as being deeply interested in any movement which might more effectively coordinate such distribution in order that the fundamental facts of American industry might be brought to the attention of the public.

"The people of this country, and, let us hope, those of the world, are now about to definitely discard the distractions of war to pursue the paths of peace. Difficulties between nations, no less than between individuals, are almost entirely the results of misinformation and misunderstanding. There is but one universal language, that language the cinema speaks. By means of the picture all are brought to understand. The intelligence and the interest of the individual are challenged. Nothing but good can come from the wide diffusion of knowledge respecting the industries, aims and aspirations of our people.

"Knowledge must be acquired. It is never inherited. So the processes of education are the prime processes of social and industrial stability.

"Industry must make itself understood in order that it and civilization may survive. Where there is no industry there is no civilization, and where there is civilization there is industry. The problem is one of education. The motion picture and the screen contain very wonderful possibilities.

"I visualize the possibility of there being a group of industry pictures, which will so well carry the romance and accomplishments of the different lines of our industrial activity from automobiles to zinc and all the alphabet in between, that the theatergoer will demand their showing and gladly pay for the privilege. There would be pictures co-operatively developed by manufacturers engaged in a particular line of industry, and which, having told the story of that industry, might have an additional chapter devoted to a particular product as an outgrowth of final finished development of such general activity."

Dr. Julius Klein, Director of the Bureau of Foreign and Domestic Commerce, spoke of the immense foreign markets that can be reached through the silver screen. "Tariff rates throughout the world are being revised as an aftermath of war," Dr. Klein said, "and many nations are beginning to manufacture their own shoes, textiles and other production, which will necessitate importations of machinery for manufacturing purposes." "This machinery," he declared, "is especially adaptable for advertising by means of industrial pictures."

## No Imports of Cotton Ties

An American buyer of cotton ties, recently in London, endeavored to place orders with British mills for delivery in this country, and it was reported in British metal trade journals that he had bought extensively. THE IRON AGE is reliably informed, however, that he did not buy, as the lowest quotation he received was £14 per ton there, equivalent to $1.36 per bundle delivered in the United States, without duty, and from that figure up to $1.66 per bundle. Continental prices were even higher, and it appears likely that no European cotton ties will be imported this year. About 18,000 bundles of German ties are in storage at Galveston, Texas, left over from last year, but such a small lot will probably be readily absorbed without affecting the domestic market.

## Preference Given Americans

WASHINGTON, April 18.—In the face of keen competition with Belgian and German concerns, American fabricators during the past few months have been successful in securing attractive bridge construction contracts from the Argentine state railroads, according to the Department of Commerce. It appears, the report states, that Argentine officials are not satisfied with the workmanship turned out by European shops and preference was given to American bidders at prices which are really higher, considering that it is the practice of nearly all domestic companies to provide for payment in United States gold.

## Fall in British Living Costs Halted

After a steady fall from a maximum reached in the spring of 1920, the index number of wholesale prices in Great Britain, prepared by the *Economist*, shows, April 1, an increase of about 1 per cent over March 1, the figures being 4297 and 4259 respectively. The high figure April 1, 1920, was 8352, or almost double the present. The average for April 1, in four years 1911, 1912, 1913 and 1914, was 2660. Hence the present figure is 61½ per cent above the pre-war, although it has fallen 48½ per cent during the last two years.

An electrically heated furnace of the rotary type and of 150 kw. capacity is to be installed in the plant of the Nash Motors Co., Kenosha, Wis., this being the third of the type to go into the plant and provided, as were the others, by the George J. Hagan Co., Pittsburgh.

# Making and Care of Flexible Steel Ropes

## Operation of Stranding Machines—Securing Open Ends of Rope—Effective Strength with Some Wires Broken

BY W. VOIGTLANDER*

WIRE "ropes" and "cables" may be defined as follows: A "wire rope" is composed of a number of strands helically twisted about a center member. Each strand may itself be composed of any number of wires helically twisted about a center member. The term "cable" is an indeterminate name used often for marine ropes, electrical conductors and suspension bridge cables, etc. It might fitly be applied to a composite construction wherein the individual filaments may be stranded, twisted or bunched and is usually applied to cables of fibrous materials.

Manufacturers of wire products use the term "wire ropes" when dealing with the subject. The combination of any number of strands in a rope, together with any number of wires in the strands, is seemingly unlimited, but practice has established for general use 6 strands as the most economical and with strands having 7, 19 or 37 wires each. Actually there are at present on the market about 70 different constructions varying from 3 to 19 strands, and having from 3 to 91 wires per strand. Probably 99 per cent of the rope wire produced in the United States is made from open-hearth steel.

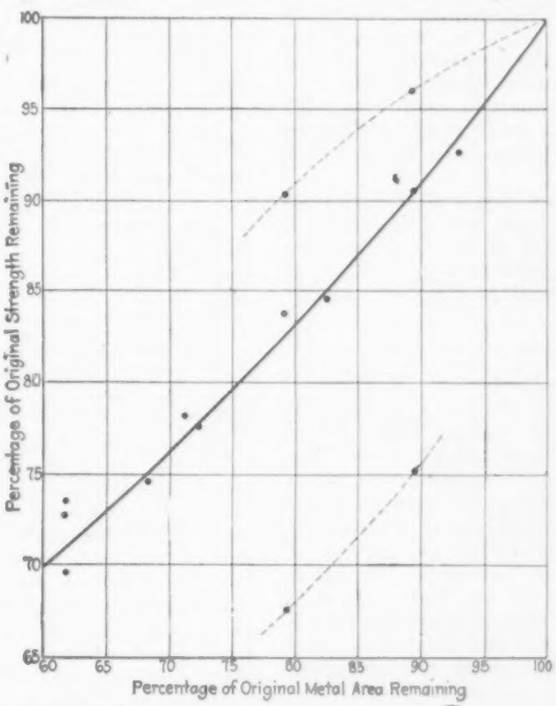
### Manufacture of Wire Rope

As may be expected, the first stranded wire ropes were made on a rope walk, as were the earlier hemp ropes, but the remarkable success of the first wire ropes created such a demand that it soon became necessary to invent machines to fabricate wire ropes with greater speed and exactness. It will be of interest to note that the original principle of the first stranding and closing machines is found in the present day highly developed equipment.

Wire rope manufacture is accomplished in three steps. The first of these is "spooling," where the wire is rewound from coils, placed on "swifts," onto cast iron spools or bobbins. The next step is to take a given number of the filled bobbins to a stranding machine, where they are mounted in "cradles" which in turn are set with their axes along the axis of the main frame.

The front bobbin contains the center or core wire of the strand and is led directly through the hollow spindle of the cradle and through the "squeezer." The other wires are led to the periphery of the main frame so that all emerge at the front of the machine, equally spaced in the periphery. They are all led down to a common apex at the entrance to the "squeezer," where they come in contact with each other and with the center wire. The main frame is set in rotation and simultaneously the wires are pulled through the squeezer. The relation between the rate of rotation and the rate of "pull out" determines the pitch of the helix or "lay" of the strand.

The squeezer consists of hardened steel blocks through which a hole of the desired finished strand diameter has been drilled. Its function is to close in the wires and to prevent the rotation of the strand after it is formed. The finished strand is passed around a measuring sheave, thence to a set of pull-out sheaves at the back of the machine and, finally, either to a wooden reel for shipment or to a cast iron or steel bobbin for use in the rope machine.




Relation Between Area of Metal Remaining in Partially Broken Cable and Strength of the Injured Cable

The last step in making wire rope is the twisting of the strands about a center. This is accomplished in a manner similar to the strand making, but for greater compactness and saving in factory space the bobbins are often placed in two sets and frequently in a vertical type machine. The bobbins, however, are mounted in the periphery of the main frame, and if they are not mechanically controlled the strands would twist off, due to the accumulated rotation of the bobbins when the main frame rotates. To compensate for this action a "back motion" is obtained by planetary gears. The rope machine is equipped with a squeezer, a measuring sheave and a pull-out set geared to the shipping reel.

As wire rope is a mechanism of somewhat complex construction, its original efficiency can be retained as a unit only when it is not distorted. In its manufacture, great care is exercised to twist the wire in the strands and the strands in the rope under uniform tension. If the ends of wire rope are not properly secured the original relation of tension, as manufactured, will be disturbed and maximum service will not be secured, due to the fact that some strands are carrying the greater portion of the load.

When cutting steel wire rope it is essential to place three sets of seizings each side of the cut, to prevent disturbing the uniformity of the rope. Unless a serving mallet is used, there is no advantage in making more than ten wraps of wire per seizing. It is important to use the proper size and grade of wire for seizing purposes; we advocate using annealed iron wire in the following sizes:

| | Diameter Wire |
|---|---|
| For ⅜ to ½ in. (inclusive) diameter rope, use | 0.047 in. |
| ⅝ in. diameter rope, use | 0.054 in. |
| ¾ in. diameter rope, use | 0.063 in. |
| ⅞ to 1¼ in. (inclusive) diameter rope, use | 0.080 in. |
| 1⅜ to 1⅞ in. (inclusive) diameter rope, use | 0.105 in. |
| 2 in. and larger diameter rope, use | 0.135 in. |

The only type of attachment that will develop the maximum strength of the rope is the spelter attached conical-shaped socket. This should be made by cutting out the hemp center, straightening the wires,

*Assistant engineer John A. Roebling's Sons Co., Trenton, N. J. This paper, together with one by H. C. Boynton, metallurgist of the same company, was delivered before the Association of Iron and Steel Electrical Engineers, at the Engineers' Club, Philadelphia.

thoroughly cleaning them by means of muriatic acid diluted with equal volume of water and, after inserting in the socket basket, using pure zinc—use no alloy or low melting metal, such as babbitt, lead, etc., use zinc only. To bend the wires or to use any metal but zinc lowers the strength of the attachment.

On many machines using wire rope it is desirable to use clips in place of sockets, and even with this type of attachment there is a right and a wrong way. The efficiency of a clip connection is a maximum for the right method only, the other two wrong methods being from 5 to 10 per cent lower. It will be seen that the clip attachment gives an efficiency of only about 80 per cent at best, so that the factor of safety is to be determined from 80 per cent of catalog strengths when using clips. There is no clip or clamp connection that will develop full strength.

A somewhat more compact connection than thimble and clips is the spliced eye, though not often used in steel plants. The efficiency ranges from 95 per cent for ½ in. ropes and smaller to as low as about 65 per cent for ropes 1¾ in. and larger.

Another consideration is the proper method of handling wire rope. The reel should be set on a shaft and rotated, or should be rolled along the ground. Never throw the reel on its side and pull loops off the side. To do so will cause kinks. The coil should be rolled along the ground or set on a swift so that it can be rotated. Never pull loops from the coil. To do so will cause kinks.

Lang lay ropes should never be wound directly from reel or coil to drum; lay out rope in a full length, if possible, or set the reel or coil as far from drum as possible. A Lang lay rope is more springy than a regular lay and should be carefully installed, always keeping tension on the rope.

### Lubrication

Lubrication performs two necessary functions—it reduces internal and surface friction and prevents corrosion. It has been proved in tests that internal friction increases bending stresses, which cause wires to break. It was seen that, by increasing the sheave diameter approximately 2¼ times, the rope service is increased only 4.6 times using dry rope, whereas the comparison of lubricated ropes shows an increase of 10 times. By comparing the advantage of lubrication without changing sheave size, we see that using 9/16 in. 6 x 19 rope on 10½ in. sheaves lubrication gives service 2.4 times that of dry rope and on 24 in. sheaves the increase is 5.2 times. This shows the advantage of lubricating.

Ropes operating in vapors or fumes or in water must be thoroughly lubricated to prevent corrosion, as this greatly weakens the rope, often causing disastrous rope failures.

There is not much value in a lubricant which will run easily and drip from the rope. Neither should it be so thick and sticky that it will not penetrate into the center of the strands and into the hemp center. The ideal lubricant is one which will not harden upon exposure nor at low temperatures and which can be made thin enough to penetrate. For this reason a lubricant applied hot will generally give good service because, in its heated condition, it will penetrate and then upon cooling will congeal into a plastic filler throughout the rope. Another detrimental feature due to lack of internal lubrication is the breaking up of inside wires. This is dangerous, as surface inspection will not reveal this condition.

### Inspection

The purpose of inspection is to secure as long a service from a rope as is consistent with safety. Through numerous inspections of traveling cranes, for example, it was found, when comparing the service rendered by cranes using the same size rope, that local operating conditions together with crane design may vary the service from one day to three years. The factor of safety for the size rope taken above varied from 3 to 7.2. It has further been found that, where cranes have given from 9 to 12 months' average service, the factors of safety have a large range, such as 21, 16, 11, 8.5, 7, 5.5 and 4.6.

Inspection, therefore, should be based on average lift of ropes for each individual machine. The inspection is to determine the number of broken wires allowable, or the maximum reduction in rope diameter due to abrasion, or to a combination of the two conditions.

*Data Covered by Slide "Reserve Strength of 6 x 19 Rope Due to Broken Wires"*

| Test No. | Number of Strands Cut | Number of Outside Wires Cut in a Strand | | Percentage of Metal Area | Percentage of Original Strength |
|---|---|---|---|---|---|
| | | Large | Small | | |
| 1 | 6 | 1 | .. | 93.02 | 92.60 |
| 2 | 6 | 1 | 1 | 89.56 | 90.46 |
| 3 | 6 | 2 | 1 | 82.62 | 84.50 |
| 4 | 6 | 2 | 2 | 79.20 | 83.74 |
| 5 | 6 | 3 | 2 | 72.23 | 77.51 |
| 6 | 6 | 3 | 3 | 68.79 | 74.51 |
| 7 | 6 | 4 | 3 | 61.83 | 69.45 |
| 8 | 1 | 6 | 6 | 89.56 | 75.09 |
| 9 | 6 | 4 | 3 | 61.83 | 72.71 |
| 10 | 2 | 6 | 6 | 79.20 | 67.60 |
| 11 | 6 | 4 | 3 | 61.83 | 73.54 |
| 12 | 2 | 6 | 6 | 79.20 | 90.29 |
| 13 | 1 | 6 | 6 | 89.56 | 95.85 |

*Notes*

Test 1—One large wire cut from each strand. Each wire cut three times. End cuts a distance of two lays from center cut. Each series of cuts in same circumference.

Test 2—One large and one small wire cut in each strand on same axis. Each wire cut three times. End cuts a distance of one rope lay from center cut.

Test 3—Two large wires and one small wire cut in each strand in same manner as in test 2.

Test 4—Two large and two small wires cut in each strand, same manner as in test 2.

Test 5—Three large and two small wires cut in each strand, same manner as in test 2.

Test 6—Three large and three small wires cut in each strand, same manner as in test 2.

Test 7—Four large and three small wires in each strand, same manner as in test 2.

Test 8—Three sets of four wires each, or all outside wires in one strand only, cut. Wires cut only once. Each set of four wires cut were a distance of one strand lay from each other.

Test 9—Same as test 7, except each wire cut only once.

Test 10—Same as test 8, except two strands were cut.

Test 11—Four large wires and three small outside wires in each strand cut. One large wire in each strand cut in center in same circumference. One end cut, two large and one small wires; other end cut two small and one large. Distance from center to end cuts one strand lay. Each wire cut only once.

Test 12—Same as test 10, except that each set of cuts was a distance of one rope lay apart.

Test 13—Same as test 8, except that each set of cuts was a distance of one rope lay apart.

Study of the table and chart shows the very important fact that, where each strand contains the same number of broken wires per given length, the loss is considerably less than if the majority of broken wires occur in one strand. This is best shown in tests No. 4 and No. 8, when a total of 12 wires were cut in each rope, showing a loss of 16¼ per cent and 25 per cent respectively. These tests are all based of course on no broken inside wires, and if the ropes are properly lubricated it is found that the inside wires rarely break in service.

The loss in strength of 6 x 19 ropes with a given percentage of outside wires broken is a trifle greater than for the same percentage of outside wires of the 6 x 37 construction. If the figures in the table are converted to a percentage basis, conservative values will be secured for allowable number of broken wires in the 6 x 37 construction.

When considering abrasion, the loss in strength in a 6 x 37 rope for a given percentage reduction in diameter is a trifle greater than that for the same percentage reduction in a 6 x 19 rope. It has been our experience that only in a very few cases does abrasion feature as the major cause of rope failure. Especially on equipment in steel plants, the majority of ropes are condemned due directly to broken wires. Abrasion may cause the wires to break sooner than otherwise, but even this condition depends upon the design and operating condition of the individual machines.

We therefore believe that, where abrasion is to be considered on any individual machine, the condemned ropes should be examined carefully for the number of broken wires in each strand in a given rope lay, recording also the exact rope diameter and final breaking strength. A tabulation of such results will furnish the best possible basis for inspection, as it will allow the establishment of general inspection rules for a certain class of equipment or will establish the need of special precautions on inspecting any machine.

## AMERICAN MOLDING SANDS

### Chicago Foundrymen Discuss Silica, Bond and Fineness as Basis for Grading

The possibility of grading molding sands according to their physical and chemical characteristics, which had been brought up at the March meeting, was again discussed on April 8 at the City Club, Chicago, by the Chicago Foundrymen's Club. Eugene W. Smith, the Crane Co., Chicago, who read a paper on this subject in March, offered a further explanation of the table which he had prepared showing the characteristics of the various western and eastern sands. (This table was published in the issue of THE IRON AGE, March 30, page 861.)

It is Mr. Smith's opinion that three elements, silica, bond and fineness, are the controlling factors in determining the suitability of molding sand for certain work. He believes that tests for these constituents will replace the older haphazard methods of judging sand by "feel," "sound," etc., just as chemical analysis of pig iron has superseded the old fracture tests. Light castings, he said, require fineness of grain, high silica to give openness and to avoid resistance to the flow of the metal, and also a bond consistent with the character of the molds to be made. Heavier castings require a heavier grain, a stronger bond and a greater porosity.

Referring to his table of sands, designating a typical Tennessee sand as sand No. 1, he stated that it was extremely open with 92.96 per cent silica, low in bond with 8.02 per cent of iron and aluminum oxides and extremely fine with a fineness test of 98.58 per cent. This sand, he asserted, can be used for castings weighing from 1 ounce to 5 pounds, on work which requires heavy ramming or pressure. It would not well resist high temperature metal. The finish of castings made from this sand would be very good, but owing to its high silica content the sand would weaken and require frequent renewal. While the amount of iron and aluminum oxides is low in this sand it is to be noted that less is needed in fine than in coarse sand. He called attention to the fact that there was more aluminum than iron oxide in the sand and that alumina gives a yellowish color to the sand as contrasted with red, which is the color given by iron.

He then referred to a Long Island, N. Y., sand, designated No. 2, with 89.16 per cent silica, 7.58 per cent bond and 0.53 per cent fineness; and a New York sand, No. 3, with 82.34 per cent silica, 12.74 per cent bond and 1.70 per cent fineness. He called attention to the difference in the silica and binders and the similarity in fineness, both sands being very coarse. These sands, he stated, would work well together for medium grade castings of weights ranging from 10 to 500 lb.

A Wisconsin sand, designated No. 5, with 82.87 per cent silica, 11.12 per cent bond and 57.3 per cent fineness, and an Illinois sand, No. 10, with silica, 75.70 per cent; bond, 16.46 per cent and fineness, 0.60 per cent, are suitable when used together for the same line of castings as No. 2 and 3, but would not require renewal so often, because of their heavy bond. They would be improved by the higher silica in the eastern sands, if blended with them.

An Indiana sand, No. 4, with silica 82.50 per cent, 11.60 per cent bond and 0.50 per cent fineness, is high enough in silica and bond for heavy work such as castings of from 100 lb. to 1000 lb. weight. For finer finish, he said, it could be blended with a sand similar to No. 5.

A Kentucky sand, No. 8, with 76.16 per cent silica, 16.26 per cent bond and an average fineness of 75 to 90, is suitable for all classes of light work, being open, strong and fine of grain. It would only require such renewal of bond as was carried away with the castings.

An Illinois sand, designated No. 11, with 56.80 per cent silica, 19.52 per cent bond and 70.24 per cent fineness, is very close, extremely strong and fine. It contains a high percentage of alumina giving it a clay-like character, and also 6.40 per cent of lime, and would ordinarily be rejected as molding sand.

Mr. Smith is of the opinion that tables, similar to the one which he prepared, can be worked out with the assistance of the buyer, the student and the sand producer, to cover all sands on the market and thereby prevent the great losses now accruing from the improper application of molding sands.

Another feature of the program of the club was an address by A. G. J. Rapp, engineer Link-Belt Co., Chicago, on sand handling equipment. His talk was illustrated by stereopticon views.

## FOUNDRY COSTS

### New England Foundrymen Trying to Obtain Satisfactory System

James L. Cawthon, Jr., metallurgist Pittsburgh Electric Furnace Corporation, Pittsburgh, was the chief speaker of the evening at the April meeting of the New England Foundrymen's Association held April 12 at the Exchange Club, Boston. Mr. Cawthon confined himself largely to the use of the electric furnace in the manufacture of gray iron, giving particular attention to production resulting from charges of borings and other cheap materials. In his opinion the proper size of an electric furnace is probably of more importance than the type of furnace. His talk was accompanied by lantern slides showing various costs, power consumptions, types of furnaces, etc.

Prior to the regular meeting there was a round table discussion of foundry costs based on replies previously received on questionnaires sent out by a foundry standard cost committee. Other questionnaires will subsequently be sent out and replies discussed at a later date, the object of the association being to arrive at some simple, inexpensive cost system. The Foundry Standard Cost Committee, originally consisting of C. I. Drake, Walworth Mfg. Co., Boston; C. Haigh, General Electric Co., Lynn, Mass.; P. C. Rogers, Roxbury Steel Casting Co., Boston; N. Russell, A. Russell & Sons Co., Newburyport, Mass.; and A. O. Brumgardt, Walworth Mfg. Co., has been enlarged by the addition of the following: F. Foster, Lincoln Iron Foundry, Boston; A. L. Goodnow, L. H. Goodnow Foundry, Fitchburg, Mass.; J. J. Donlan, G. E. Hoglund Foundry Co., Gardner, Mass.; W. J. Agambar, J. W. Jolly, Inc., Holyoke, Mass.; and William C. Doherty, Doherty Brothers, Lowell, Mass.

E. H. Ballard, president, presided at the regular meeting. He first introduced J. L. Linsley, Eastern Malleable Co., Naugatuck, Conn., chairman pig iron committee, National Association of Purchasing Agents, who urged the members of the association to approve the new pig iron contract sanctioned by the purchasing agents. Mr. Linsley stated that five foundrymen's associations have approved the contract and that half a dozen others will take action on it within a short time. Approval by the New England Foundrymen's Association was put over until the May meeting. The Manchester Foundry Co., Manchester, N. H., was made a member of the association.

Henry Gieske, engineer electrical furnace department, Ajax Metal Co., and formerly superintendent Bridgeport Brass Co., Bridgeport, Conn., will talk on Various Phases of the Melting of Non-Ferrous Metals, at the May meeting of the association.

### Keynote of Industrial Engineering Meeting

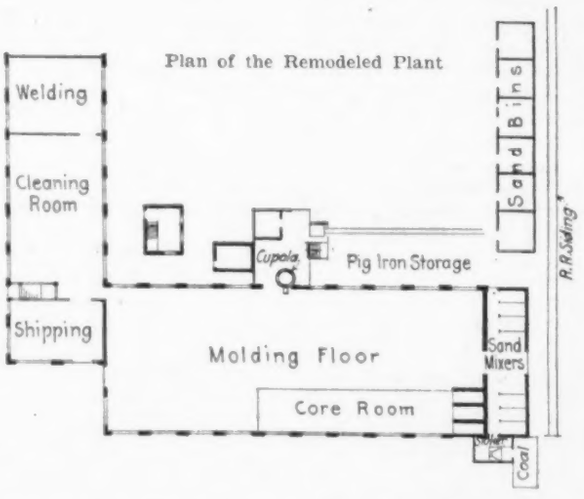
The influence of industrial engineering upon the earnings of capital and labor will be the keynote of the spring convention at the Hotel Statler, Detroit, April 26 and 28, of the Society of Industrial Engineers. The addresses will cover how industrial engineering serves industry, the chief executive, the sales manager, the factory manager and how industrial engineering can serve labor, finance and the public. The papers and discussions will also include the conservation of material, plant, equipment, labor and the workman.

# A New Canadian Motor Foundry Plant

## How an Old Plant Was Made Into a New One, Designed with a View to Future Expansion—Machine Molding a Feature

AMERICAN foundrymen for a long time have known J. J. Wilson, who for years was in charge of the foundry work of the General Motors Co., and directly supervised the Cadillac foundry in Detroit, the Buick foundry in Flint, Mich., and the Central Foundry Co. in Saginaw, Mich. Last fall Mr. Wilson severed his connections with the General Motors Co. to take charge of a new plant for the Hiram Walker & Sons Metal Products Co., Ltd., Walkerville, Ont.

This company had some buildings which had been used for an alloy and special foundry, which it decided to have rearranged and made into a motor casting shop. The changes and rearrangements were made under the direction of the H. M. Lane Co., Detroit. The accompanying illustrations show what has been done in the way of making a clean and efficient foundry from existing buildings.



Plan of the Remodeled Plant

The general arrangement of the plant is shown in diagram. The main foundry bay, with a general view of much of the foundry plant, is shown in one photograph. This view was taken from in front of the sand mixing department looking down the foundry floor. A pair of Osborn molding machines are located at this end of the shop back of the position of the camera, these being used for crank cases and cylinders. At the opposite end of the shop there are at present molding machines fitted up for flywheels. The entire bay shown at the right will be given up to light work, but later will probably take one flywheel floor. The bay on the left is devoted mainly to core making. The air compressor and sand blast are located in the background at the left, and the door leading to the cleaning room can be seen clearly in the background at the right.

General lightness of the shop was secured by whitening the walls with a white oil paint, from which the dust can readily be blown off.

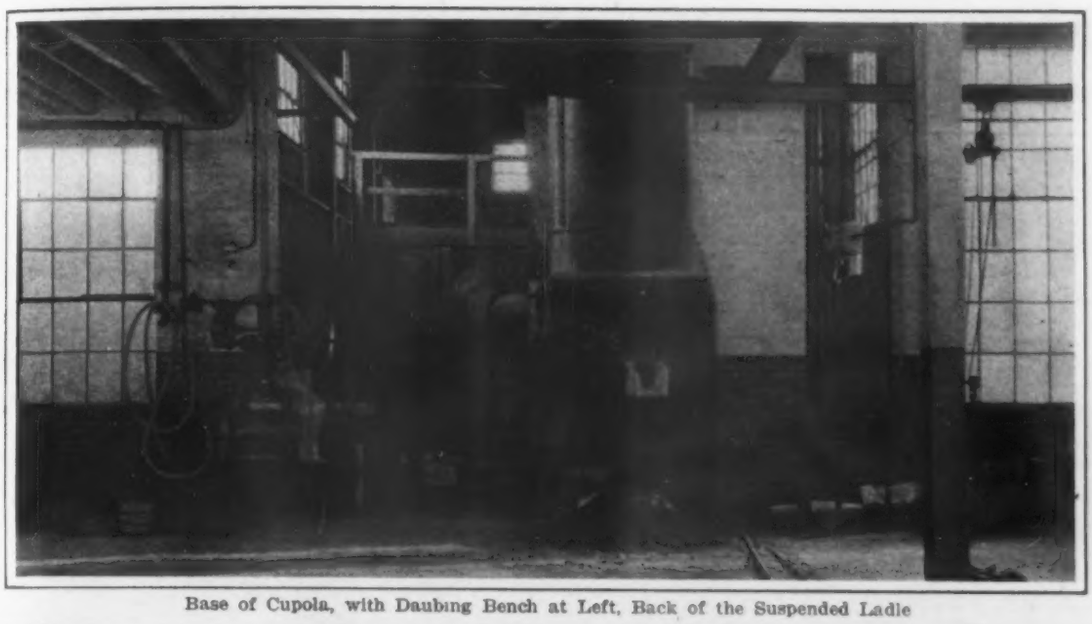
One problem which had to be met was the expectation of the management to extend the plant and utilize the entire existing building as a core room. For this reason a steel structure was put up at the middle of the building at the right for housing the present melting unit. This consists of a 72-in. shell Whiting cupola, the air for which is supplied from a Roots positive pressure blower directly connected with a motor. A front view of the melting unit is shown, the ladle daubing bench being at the left and the closed blower room in the rear. This entire steel structure was so arranged that it can be taken down and moved to another part of the plant when the foundry is extended.

The charging platform is served with a Whiting pneumatic elevator, the charges being made up on the platform on a multiple beam scale. The charging platform is of sufficient strength to carry 750 lb. per sq. ft., and under ordinary circumstances sufficient metal is carried in reserve at the back of the platform to take care of at least two days' melt.

Metal from the spout can be taken in ladles on a monorail, run directly onto the Brillion cranes and poured with Brillion pouring devices. On the same crane runway are being installed other Brillion cranes with air hoists, for molding.

The core room is located at the left (as seen in the general view). The core baking equipment at present

Main Bay of the Foundry, with Core Room at the Left



Base of Cupola, with Daubing Bench at Left, Back of the Suspended Ladle

Sand Mixing Room at Rear of Foundry

Material on the Charging Platform Is Assorted into Piles, from Which the Charges Are Made Up, and Weighed on the Scales in Foreground. The charging door is closed tightly between successive additions to the cupola contents. Charging is done by hand

consists of a battery of three forced draft auxiliary air ovens, built by Holcroft & Co., Detroit. The core racks are handled with a Shepard jacklift truck, the present arrangement of the core room making it possible to deliver the cores directly from the core racks to the molders.

Core Room, with Rack Type Ovens in the Rear

Along the general incoming track, which is located across the back of the property, were constructed a set of storage bins, as the bins in the mixing room at the end of the foundry were not of sufficient capacity to take care of the winter's supply of sand. The mixing room is directly back of the core ovens, and the arrangement of the Sellers centrifugal mixer for facing sand and the Standard Sand & Machine Co. paddle mixer for core sand is clearly shown in one illustration.

After castings are made they are taken to the shake-out floor extending across the back end of the building. The castings then pass through the door shown at the right into the cleaning room, on one side of which is a battery of tumbling barrels. On the opposite side are the grinders, and at the other end provision for the water test.

Above the cleaning room is situated the wood and metal pattern shop. The illustrations were taken at the time the molds were being put up for the first heat, and hence the shop was not full of work.

Plans have been made for extending the plant without interfering with operations, and in such a way as to keep pace with any probable increased demand for castings.

## Pittsburgh Basing Point Hearing

CHICAGO, April 15.—F. R. Todd, vice-president, Deere & Co., manufacturer of farm implements, Moline, Ill., asserted that his company normally consumes 100,000 tons of steel a year on which it pays $488,000 in the form of "Pittsburgh plus" which has to be passed on to the farmer in higher prices on implements. This testimony was presented in the hearing before the Federal Trade Commission in this city which has been in progress for several weeks and will probably not be concluded until the middle of May, when the scene of the hearing will be shifted to Birmingham, Ala. Mr. Todd also asserted that when the Chicago base established by the War Industries Board was abolished, he and other members of the Farm Implement Committee of the board called on Judge Gary and explained that something had to be done to prevent an increase in the price of agricultural equipment. A meeting of the directors of the American Iron and Steel Institute was therefore called and it was decided that while the Chicago base could not be restored, a concession would be made to implement makers amounting to $5 a ton on plates, shapes, bars and various specialties, or nearly enough to offset the then "Pittsburgh plus" of $5.40.

Fred de Coningh, formerly president the Sykes Co., Chicago, steel roofing manufacturer, testified that prior to 1900 sheets were sold f.o.b. mill, or with a freight allowance which was more than the actual freight from mill to destination. When the American Sheet Steel Co., predecessor of the American Sheet & Tin Plate Co., was organized in 1900, the "Pittsburgh plus" practice, he said, was introduced. Between that time and 1912 or 1913, a number of independent mills came into existence and made a practice of quoting a delivered price in Chicago which was the next multiple of five below the price f.o.b. Pittsburgh plus the freight to Chicago. For example, if a price of 2.03c., delivered Chicago, were quoted by the leading interest, the independents would quote 2c. flat. As the smaller mills increased the volume of their business, he said, they all adopted a policy of strict adherence to "Pittsburgh plus" and since 1913 his company has never been able to buy sheets except f.o.b. Pittsburgh and furthermore the prices of all mills have been identical.

Among others who appeared before the commission were H. G. Copp, director of purchases, Deere & Co., Aubrey Sykes of the Sykes Co., and W. H. Fitch, president and general manager Richards-Wilcox Mfg. Co., manufacturer of builders' hardware, Aurora, Ill.

## Conversion of Shipyard Into Pipe Shop

SEATTLE, WASH., April 11.—With the award of a $1,468,602 municipal contract for riveted steel pipe for the Cedar River water system leading into the city came the definite announcement of the conversion of the old Patterson-Macdonald shipyard into a shop to manufacture the city piping and for other contracts, according to Robert D. Plageman, sales manager of the Western Pipe & Steel Co., San Francisco, which recently secured an option on the property.

The contract for construction of five miles of the 16-mile Cedar River pipe line was awarded to Grant Smith & Co. on their bid of $1,468,602 for the riveted steel line. The bid of the Continental Pipe Mfg. Co., a Seattle industry, to construct the five miles of line was rejected. This was the wooden system insisted upon by local business men.

It is stated that the conversion of the shipyard property will be accomplished and manufacturing begun within 60 days. About 200 men will be employed. Installation of the pipe line will take one year.

The Markey Machinery Co., which for several years has been engaged in marine work, is converting a portion of its plant in the industrial section for the manufacture of hot water heating boilers designed especially for the needs of the Pacific Coast.

# METAL TRADES ASSOCIATION

### Annual Convention in Session This Week at Hotel Astor, New York

One of the features of the annual convention of the National Metal Trades Association, which opened Wednesday morning, April 19, at the Hotel Astor, New York, was the presentation of a report by the committee on industrial training which outlined a method of training apprentices. This committee, consisting of Harold C. Smith, chairman, who is president of the Illinois Tool Works, Chicago; William Taylor, president Chandler & Taylor Co., Indianapolis, and John C. Spence, works manager, grinding machine division, Norton Co., Worcester, Mass., has devoted considerable time and effort to the devising of a method of apprenticeship adaptable to small plants as well as large. The committee was assisted by Philip C. Molter, the association's director of industrial education.

There are a great many methods of training apprentices in vogue in American factories and shops. The committee examined all of these methods thoroughly and in its suggested plan it has sought to incorporate their virtues and eliminate their defects. The report which the committee prepared lays out a course of shop work for the apprentice, suggestions for a standard diploma, for an interchange of apprentices among the smaller or specialty shops and covers other aspects of the apprenticeship situation which have occurred to only a few of the more advanced of American manufacturers.

The convention opened Wednesday morning with the usual preliminaries, including the reports of officers, which will be given in next week's issue of THE IRON AGE. Robert M. Lynch, president San Francisco Chamber of Commerce, was on the program for an address at the opening session on "The Industrial Emancipation of San Francisco."

Four addresses were scheduled for the Wednesday afternoon session: "American Industry and the Stabilization of Europe," by Harold G. Moulton, University of Chicago; "Industrial Courts," by James A. Emery, counsel National Association of Manufacturers; "The Farmer as a Balance Wheel," A. M. Loomis, National Grange, Washington, and "Facts and Fancies About Wages in Basic American Industries," by Magnus W. Alexander, managing director National Industrial Conference Board, New York.

Thursday's program includes addresses by L. F. Loree, president Delaware & Hudson Railroad, and E. L. Greever, Gillespie & Divine, Tazewell, Va., on "West Virginia Fights for Freedom." At the session Thursday morning the report of the committee on industrial education and the report of Philip C. Molter, superintendent of the department of industrial training of the association, will also be heard.

The annual banquet was held Wednesday evening.

## No Anxiety in Wisconsin

MILWAUKEE, WIS., April 17.—There should be no anxiety in Wisconsin nor is there occasion for concern over the likelihood of exhaustion of supplies of bituminous and anthracite coal in Wisconsin as the result of the present miners' strike, according to a statement made jointly by the Railroad Commission and the Wisconsin Department of Markets, following a thorough analysis of the situation. The statement says in part:

"Any attempt of coal dealers to stampede people of Wisconsin into placing large orders for fuel on the basis of a shortage of coal, or any effort to increase prices until the present large supply on the docks is disposed of, would be uncalled for. Rather than increase prices to consumers, dealers should soon be in position to grant reductions on the basis of reduced freight rates ordered by the Railroad Commission to interior points of the State, which will be effective April 28."

After an extensive survey of the Wisconsin coal situation last September, the department of markets concluded that the fact "of the past, present and possible continued business depression, coupled with the fact that Illinois and Indiana are shipping bituminous coal into the State in greater volume than any other previous year, indicates beyond a shadow of a doubt that all dock companies are going to carry over a goodly tonnage of soft coal into next year. There will be no coal shortage at docks in Wisconsin, either hard or soft."

## Etching Reagents for Alloy Steels

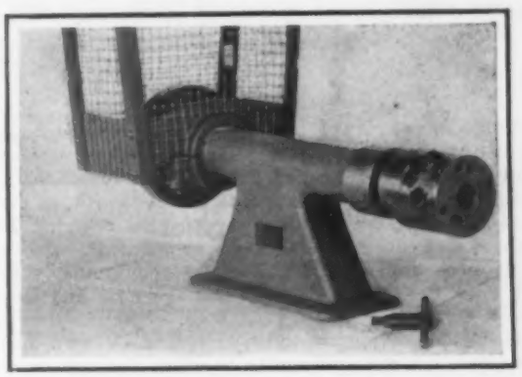
Several series of "sequence etchings" have been tried out by the Bureau of Standards on a specimen of high-speed steel which was in the "as received from the mill" condition. Sequence etching means the etching with two or three reagents in successive order without any repolishing of the section between the etchings, and the taking of photomicrographs after each etching at the same spot in the microsection in order to note any changes in microstructure produced by the last etching as compared with that developed by the preceding etching reagent.

The reagents used in various combinations were: (1) Dilute ammonium hydroxide solution together with a weak electric current, the specimen being made positive pole; (2) two per cent alcoholic solution of nitric acid; (3) boiling sodium picrate, and (4) Murakami's reagent (solution of potassium ferricyanide and sodium hydroxide) at boiling temperature.

The results, as judged from the behavior toward the various etching reagents tried, appear to show that there are at least three different constituents present among the imbedded globules or particles in the specimen of high-speed steel, in the "as received from the mill condition," though any attempt to state the nature of these constituents would, in view of present developments, involve speculation.

## Lapping and Filing Lathe

A lapping and filing head or lathe intended for use in lapping small holes and thereby taking the work from a more expensive lathe has been placed on the market by the Marvin & Casler Co., Canastota, N. Y.



Lapping and Filing Lathe Complete with Guard

As shown in the illustration, the spindle is driven by a pulley mounted on one end, the other end being provided with a drill chuck. The tool is equipped with ball bearings at each end of the spindle. Either the company's twin screw drill chuck or three jaw chuck is provided, as desired. The base of the tool is 10¾ in. long and the distance from the pulley to the drill chuck is 14⅝ in.

Stockholders of the Westinghouse Air Brake Co., at the annual meeting, April 11, voted to increase the number of directors from 11 to 14, electing J. F. Byers, J. M. Lockhart and R. B. Mellon to the board. These retiring directors were re-elected: A. L. Humphrey, Benjamin V. Becker, J. D. Callery, E. M. Herr, John F. Miller, John R. McCune, Thomas A. McGinley, Charles McKnight, M. S. Rosenwald, W. D. Uptegraff and H. H. Westinghouse.

## PREMIUM PRICES

### Effects of the Coal Miners' Strike in the Youngstown District

YOUNGSTOWN, April 18.—The coal miners' strike constitutes the overshadowing influence in the steel industry and premium prices have already made their appearance. An advance all along the line appears likely. Sheet bars have sold at $32 and $33, as compared with $31, the price level which prevailed prior to the beginning of the coal strike. It is likewise reported in this district that 5000 tons of small billets have been sold at $33, an advance of $2 above the market.

Independents have largely withdrawn quotations on future commitments owing to the situation which has developed. A shortage of sheet bar material is evident, one Valley maker having gone into the market to purchase a round tonnage to meet requirements above its production. An early markup in such quotations to $35 is freely predicted, with little merchant tonnage available owing to restrictions on production and the firm demand. Advanced sheet bar quotations would be almost certain to bring higher prices on the finished product.

Iron production is being held back by the strike, a situation accountable for stiffening prices. Advance in basic iron to $25 is forecast, if labor troubles at the coal mines continue for any length of time. Little merchant iron, in fact, is available in this district. One interest reports knowledge of a sale of standard basic at $22, and a tonnage of off-grade iron at $19.

It is in the restriction of iron output that the strike is exerting its most pronounced influence on the steel industry in this district.

The sheet division of the industry as yet shows little effects of the disturbance, though higher prices are freely predicted. A number of independents say that the next advance will be $5 per ton. Tonnages are coming through at the prevailing levels of 2.40c for blue annealed, 3.15c for black and 4.15c for galvanized, but not in the volume driven in during the last week in March just prior to the last markup.

Independents are booked ahead in their sheet departments anywhere from 30 to 60 days and in some cases for even longer priods, at the old prices of 3c and 4c for black and galvanized respectively. Consequently some decline in new buying was anticipated. In the Mahoning Valley sheet mills are engaged in excess of 80 per cent of capacity. The Republic Iron & Steel Co. has added five more sheet mills at its Niles works, for a total of 13. But for shortage of steel, another large interest would have enlarged its sheet production this week, specifications warranting such action.

While the coal properties operated by district steel companies are suspended for the time being, managers believe that after the first stampede miners will show an inclination to return to work. In the non-union workings, fully seven-tenths of the miners deserted their posts through fear and intimidation states the manager of the mining department of a Youngstown interest. Most of the miners are foreigners, he points out, and while very susceptible to the influences of organized propaganda, such as the unions have been disseminating, are likewise easily frightened by threats of violence.

Raw materials are feeling the effects of a stronger market. An important buyer of ferromanganese reports the price has advanced in some quarters $5 per ton, to $70, as compared with a recent level of $65, seaboard. This interest recently purchased in excess of 2000 tons on the basis of $62.50 seaboard, freight charges amounting to $6.64 delivered at furnace. Deliveries are specified at the rate of 250 tons monthly during remainder of the year. A transaction involving over 1000 tons of speigeleisen, 19 to 21 per cent, was recently closed by an independent on the basis of $27.50 furnace, or $34.14 delivered.

Pipe, wire products and strip steel are appreciably stronger. The Youngstown Sheet & Tube Co. is operating 10 tube mills this week, leaving only one unit inactive. Jobbers are buying in anticipation of an advance in this market, while tonnages are being placed regularly for oil country goods. Wire nails are firm at $2.50 per base keg, and demand is improved for fencing material. The principal independent producer, in fact, reports that it is compelled to turn down some proffered business.

Makers of strip steel are in better position to secure 2c. for hot-rolled and 3.65c. for cold strip, prices recently established. New tonnages of tin plate would probably command $4.75, but most of the tonnage now being rolled was taken at $4.60.

## Railroad Traffic Reduced

YOUNGSTOWN, April 17.—In the Youngstown district effects of the coal strike are being felt by the railroads, which report a decrease of five per cent in loaded car movements for the first ten days of the month, as compared with the corresponding period in March. The decrease has since become more pronounced, affecting chiefly such coal carrying lines as the Pennsylvania, New York Central, Pittsburgh & Lake Erie and Baltimore & Ohio.

Movement of merchandise, including steel products, is heavier, but not sufficiently to offset the loss in coal shipments.

## Plants at Muncie, Ind., Resume

Metal-working and other industrial plants at Muncie, Ind., are resuming operations and bringing production to a point of close to normal, while a number of local factories are arranging for an immediate increase in output and working forces. Among these latter, the Durant Motor Co. of Indiana is planning to add about 300 men to the payroll within the next few weeks; production is now on a basis of from 30 to 32 cars per day, with employment of about 500 men. Local divisions of the General Motors Corporation are adding daily to the working forces; of these, the Muncie Products Co., is maintaining a working quota of 900 men, to be advanced to 1000 at an early date; other branches of the corporation are giving employment, collectively, to about 600 operatives. The Warner Corporation has adopted a night schedule in addition to regular day production, with employment of about 350 men; the bulk of production is devoted to parts for the Durant automobiles. The Warner Gear Co. is increasing operations and expects to be on a full capacity basis at an early date. Other companies in the district that will increase production before the close of the month are the Muncie Gear Co., the Muncie Malleable Iron Co., the Gill Clay Pot Co., the Hoosier Auto Parts Co., and the Hemingway Glass Co. The Kitselman Brothers Co., manufacturer of wire fencing, etc., is operating at close to normal, as is its affiliated company, the Indiana Steel & Wire Co., the two plants giving employment to several hundred men.

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The Broderick & Bascom Rope Co., wire rope, St. Louis, reports that its loss by the first recent fire was less than $8,000 and the second fire less than $150,000. The greater part of the buildings was saved and will soon be in operation. The company has increased its capacity at Seattle, where it has a plant half the size of its St. Louis plant. Full force is running night and dav at Seattle and the entire western trade will be taken care of by that factory until the St. Louis plant is again in operation.

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A public auction of United States Government surplus property will take place at the Port Newark Storage Depot, Port Newark, N. J., at 10 a. m. Monday, April 17. A miscellaneous lot of material will be sold, including structural steel, bolts, nuts, wire, steel sheets, road machinery, conveying machinery and many other articles. Wilmerding, Morris & Mitchell, 470 Broome Street, New York, are the auctioneers in charge.

## All-Water Route Steel Shipments to St. Louis

ST. LOUIS, April 18.—The first shipment of steel products by all-water route from Pittsburgh to St. Louis to be unloaded at the St. Louis municipal docks at the foot of North Market Street arrived in St. Louis last Friday night. The shipment was made by the Jones & Laughlin Steel Co., Pittsburgh, and consisted of three barge loads. The barges were towed by one of the Jones & Laughlin towboats as far as Cairo, Ill., where the tow was turned over to one of the boats in the Federal Barge Line.

The shipment consigned to St. Louis consisted of 3000 tons. Of this 600 tons of structural steel was for the Stupp Brothers Bridge & Iron Co., and 150 tons for the St. Louis Structural Steel Co., this being the first shipment of structural shapes ever made by all-water route to St. Louis. The Frick-Reid Supply Co. received 800 tons of iron pipe for St. Louis and 419 tons was for their branch at Casper, Wyo.

## 20-Ton Road Train for Transporting Manganese

A plant has recently been put in operation at Redwood City, Cal., for producing manganese dioxide from the various manganese ores mined in that vicinity. The enterprise is the outgrowth of California's effort during the war to meet the demand for manganese. The name of the company operating the plant is the American Manganese Products Co. The ores contain 35 to 40 per cent of manganese and are highly siliceous. The manganese dioxide, produced from these ores by a chemical process invented by E. H. Westling, of San Francisco, is sold to manufacturers of dry batteries.

Ore Is Hauled by Truck Train Shown Above. A 10-ton truck having six wheels and two 5-ton trailers are used

To bring the ores from the various mines an unusual truck train is used, consisting of a 10-ton truck, having six wheels, with two 5-ton trailers. There are four wheels and two axles in the rear of the power unit over which the load is carried. All wheels of the unit inter-steer so that, when the front wheels are turned in one direction, the rear wheels automatically turn in the opposite direction, and the truck is practically on a pivot, giving a short turning radius. The 6-wheel drive serves to eliminate slippage. Putting the 10-ton load over the four wheels in the rear instead of over two as in a four-wheel truck doubles the bearing surface of the train and brings only half the pressure on any one point of pavement. This practice, it is claimed, will greatly increase the life of roads and pavements.

All four wheels of the two trailers inter-steer, consequently one driver can drive the train around a sharp corner without looking around to see if the trailers are following safely, because the wheels of the trailers follow the path made by the motor truck.

The motor truck is equipped with hydraulic steering gear, which automatically is thrown into hand gear should anything happen to the hydraulic steering mechanism. This enables the train to be steered with a minimum of effort on the part of the driver. One man drives the train without assistance.

Each wheel of the motor truck and the trailers has its own brake, which is a combination pneumatic and hydraulic device. It is arranged that should one or more of the trailers get loose the brakes will be automatically applied. There is also a device that automatically puts the brakes on the trailers when they are crowding the power unit going down grade.

There are four ball universal joints on the propeller shaft leading from the transmission to the front and rear axles, which steer and drive simultaneously. The tires are 36 in. by 7 in. The wheel base between front and rear wheels is 141 in. and between the two rear wheels 56 in.

## Will Study Use of Steel Cars

WASHINGTON, April 18.— Recommendation that a year be allowed to study the matter has been made by the Interstate Commerce Commission in a report on a bill introduced by Senator Harris of Georgia to compel common carriers engaged in interstate commerce to use steel passenger cars. The bill has been modified along the lines of the commission's suggestions.

The commission declared that such a bill would introduce many complications and perhaps impossible situations, where existing roadbed and structure would not be heavy enough to support steel cars.

The commission also called attention to the progress that had been made in recent years in the construction of steel passenger cars and cars with steel underframes, declaring that the construction of steel cars had been voluntary on the part of the railroads and that to prevent shortage of equipment the retirement of the remaining wooden cars would have to be accomplished over a period of years.

The opinion was also expressed that legislation at present should provide only that no wooden passenger cars should be located in a train between or ahead of steel under-frame cars.

## Will Preside at Ore Rate Hearing

WASHINGTON, April 18.—Examiner Bronson Jewell has been assigned to preside at the consolidated ore rate hearing set for Monday, April 24. This proceeding involves the complaint of Buffalo iron and steel producers regarding the relationship of fuel and ore rates and also the suspension by the Interstate Commerce Commission of tariffs proposing reduced rates on ex-lake and Eastern ore rates.

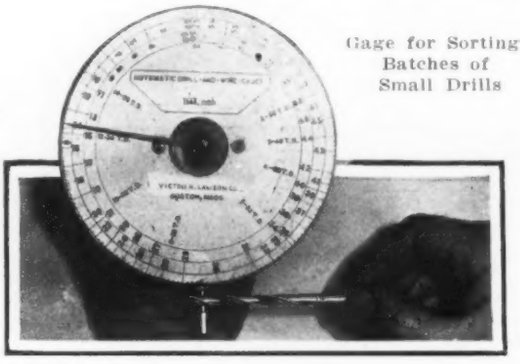
## Will Build Bolt and Nut Plant

The Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., has purchased 23 acres at Coraopolis, Pa., in the Pittsburgh district for the purpose of building a bolt and nut plant. The company has no definite plans at present.

## Automatic Drill and Wire Gage

An automatic drill and wire gage for quickly and accurately determining the gage number of drills from Nos. 1 to 60, showing under or over size in thousandths and half thousandths of an inch, is being offered by the Victor R. Lawson Co., Boston. It also includes a tap-drill table to show the proper drills for drilling holes which tap to a full thread when the following taps are used: 14-20, 12-24, 10-32, 8-32, 6-32, 4-36, 3-48, and 2-56.

The construction of the gage can be seen in the accompanying illustration. The forefinger of the operator engages the opposite end of the sliding jaw, which extends backwardly in a square groove and opens by depressing it. When the pressure is removed the jaw



Gage for Sorting Batches of Small Drills

closes automatically. It is understood that the gage may be operated by a foot treadle also, leaving both hands of the operator free to alternately insert and remove the work.

## Corrosion of Chromium Steels

It appears from the series of tests which the Bureau of Standards has carried out upon the corrosion of chromium steel, that the behavior of the material when subjected to the acid test is not a sure criterion of its resistance to atmospheric corrosion. Of all the alloys examined, a high nickel-chromium steel, invar, pure iron, and medium carbon steel (very slowly cooled from a high temperature) were the most resistant to hydrochloric acid as measured by the loss of weight per unit area per day. High chromium steels (for example, 13.70 per cent Cr, 0.29 per cent C) were found to be attacked by acid very much more readily.

However, when the same specimens were subjected to a weathering test, consisting of a partial immersion in water and exposure to the air, the order of resistance was almost completely reversed. The high chromium steels were the ones to withstand the treatment best, the low chromium ones and the pure iron showing rust spots early in the test. The combination of both nickel and chromium appear to make the steel resistant to both acid and weather attack.

In general, the steels which were quenched were found to resist corrosion better than the same material in the annealed state, but the differences found were much less than the differences resulting from composition changes, thus indicating that composition rather than treatment should receive primary consideration.

## Electric Furnaces for Various Uses

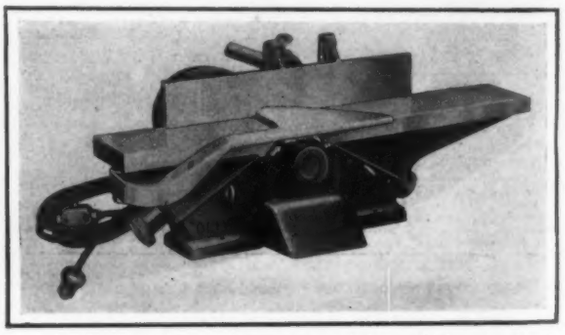
The increased activity among the railroads and in the railroad supply field has been reflected in an increased demand for electric furnace equipment. The Electric Furnace Co., Salem, Ohio, has just taken an order for a 250-kw. car type Baily annealing furnace from a large western manufacturer of manganese steel castings for a Pacific Coast plant. The furnace will have a capacity to heat 17 tons of manganese castings per day. Another recent order is for a 125-kw. melting furnace for ferromanganese which will be installed in the plant of the Pettibone-Mulliken Corporation, Chicago, and will be used for making hot additions to each charge of the Heroult electric furnaces. This Baily unit will have a capacity of 1000 lb. of ferromanganese per hour. The Griffin Wheel Co. placed an order for a 75-kw. melting furnace for melting bronze for railroad bearings. This furnace will have a hearth capacity of 1000 lb. and will be installed at Tacoma, Wash. The Best Foundry Co., Bedford, Ohio, has placed an order for a 50-kw. 800-lb. melting furnace for melting copper-zinc alloys.

## Hand Planer and Jointer for Pattern Shop

A machine intended to replace the hand plane for jointing and fitting almost all classes of small work in wood construction has been placed on the market by the Oliver Machinery Co., Grand Rapids. It may be used to advantage in small pattern shops, and also in large shops where the machine may be mounted on each man's bench to save operating a big machine, and save the time required in going to and from the big machine. It can be used where power lines are not available as it is equipped to connect with electric lamp sockets.

The machine is shown in the illustration. It is designated as the No. 133 hand planer and jointer, and is made in two sizes, 4 and 6 in. The 6 in. machine planes 6¼ in. wide and the 4 in., 4¼ in. wide; both sizes rabbet up ½ in. The drive is by motor or belt, the motor drive being direct except for 25 cycle, where a belted motor drive type is used. The motor is fully inclosed, adequately ventilated and fitted with ball bearings. Cord and screw plug attachment and push button switch are provided on direct current and single phase alternating current machines. With two and three phase alternating current machines which run on power circuits the cord and plug are omitted and the switch provided is of the rotary snap type.

The tables are mounted on inclined dovetailed ways. They are raised and lowered by the hand wheel and screw and locked in position. Each table has a steel lip next to the throat opening. On the larger machine the front table is 6¼ in. wide by 19½ in. long and the rear table 6¼ in. by 11¼ in. On the 4 in. machine the front



Front View of Hand Planer and Jointer. Motor is direct connected to cutting head

table is 4¼ by 15½ in. and the rear table 4¼ by 9¼ in. The total height is 6 in.

The fence is adjustable anywhere across the table and can be tilted and locked in any position up to 45 deg. It is 16 in. long, 2½ in. high and rests against the rear table. When not in use it may be swung out of the way. The company's full automatic aluminum jointer guard is part of the equipment.

The cutter head is of the three-knife circular safety type fitted with three tungsten-chromium thin steel knives, ⅛ in. thick and 1 in. wide. The cutting diameter is 3½ in. The cutter head runs in dust proof ball bearings. Extra equipment includes a rabbeting arm which is attached to the infeed table. A knife setting and jointing attachment can also be provided, and consists of a right angle way with a slide block, jointing stone and aluminum guard. It serves as a guide for setting the knives and by sliding the jointing stone forth and back while the cutter head revolves, it will sharpen and joint the knives.

The bench space required for 6-in. size is 32 in. length and 18 in. wide, overall; for the smaller machine, 26 by 16 in. A cast iron floor column with tripod legs is obtainable for use when bench space is not available.

# Design of Open-Hearth Furnaces

## Consideration of Port Areas and Velocities As Affected by Pressures—Chimney Height Determined

BY A. D. WILLIAMS*

PORT areas and velocities can now be fixed. In so doing, it should be borne in mind that the waste gases must pass out through the gas and air ports, in proper proportion to supply the required amount of preheat. This is rarely accomplished when chimney draft is depended upon, particularly when the gas is given a high velocity as compared to the air. The angle necessary for the jet of flame to sinter in the bottom will be fixed by the resultant of the air and gas angles and velocities. That is, either the air or the gas may be given a maximum velocity, but any change in either air or gas velocity will entail a corresponding change in gas or air velocity as well as in port angles to produce the fixed resultant velocity and angle.

For instance, if the gas port is lined on the resultant angle, the gas velocity will be a maximum and the air velocity a minimum. The desirable condition is a velocity which will give a hot furnace for its full length. Frequently the trouble with over-heated port blocks at the outgoing end is due to the high velocity of the incoming gases. With a high velocity at the incoming end, a portion of the jet is, practically, shot into the outgoing port.

In most American furnaces, the air port forms a segment over the gas port, it being claimed that this construction forms a blanket of cooler air between the jet of flame and the roof. As the entering air is several hundred degrees cooler than the flame itself, or the hot products of combustion, it is probable that this blanketing action is largely a matter of imagination. Cooler gases naturally sink below hotter gases, but any swift moving jet has a tendency to hang together, and will carry a layer of colder gases on top of itself. These colder gases then tend to move diagonally to the edges of the jet, at the same time that they are absorbing heat. The hottest gases, as soon as they escape from the influence of the jet, lose their velocity and tend to seek the roof of the furnace.

The air pressure available for creating velocity in the port is 0.2629 in. water column, due to the stack effect of the checkers and flues. It is not, however, advisable to utilize the full pressure available. In the case of the gas, 0.1404 in. of water is due to the stack effect of the checkers and flues, but in addition there is the pressure created in the producer, which may be varied, amounting to from ½ to 1 in. of water (12 to 25 kg. per sq. m.). However, for every unit of pressure expended in creating velocity in the gas port, a unit of pressure must be available at the outgoing port, to pull a proportional part of the waste gases through the port. If this is not the case, the quantity of waste gases passing through the gas regenerator will be reduced, and the amount of heat available for preheating the gas will be reduced.

To allow for contingencies, such as the blocking up of flues and checkers, and to provide a margin for forcing the furnace, one-half of the pressure available for impressing velocity in the air port will be kept in reserve. The formula for the pressure required to impress a given velocity is:

$$p_w = 0.19245 \frac{v^2_1}{2g} p_{gas}$$

in which $p_w$ is measured in inches of water column. This formula can be transposed to:

$$v = \sqrt{\frac{2g\,p_w}{0.19245\,p_{gas}}}$$

For the case in hand

$p_w = 0.2629 \times 0.5 = 0.13145$ in. of water;
$p_{gas} = 0.0215$ lb. per cu. ft.;
$2g = 64.4$

from which $v = 45.22$ ft. per second.

Both the air and gas velocities have to be corrected by a coefficient, according to their relative masses and volumes. These coefficients are derived as follows:

$$\text{For gas } \frac{188 \times 0.0702}{300 \times 0.0805} = \frac{13.197}{24.150} = \frac{0.3533}{0.6467} \text{ For air}$$

The value of the air component will therefore be:

$$45.22 \times 0.6467 = 29.24$$

The air port will be:

$$A = Q_l \div v = 1621 \div 45.22 = 35.85 \text{ sq. ft.}$$

There is considerable latitude in proportioning the gas and air port velocities and angles, to obtain the necessary resultant angle and velocity. The entire velocity (theoretically) may be supplied by either the gas or the air, or it may be proportionately divided between them. The ports may both be given the resultant angle or the port angles may differ, so long as the angular velocity components of the air and gas give the angle and velocity necessary for the resultant. In this case the resultant velocity is 65.62 ft. (20 meters) per second. It will be assumed that the port angles are the same, being the resultant angle. Under these conditions the velocity component for the gas will be:

$$65.62 - 29.24 = 36.38$$

From which the gas port velocity will be:

$36.38 \div 0.3533 = 103$ ft. (31.39 meters) per second

The gas port area will be:

$1016 \div 103 = 9.86$ sq. ft. (0.942 sq. m.).

The gas velocity arrived at is the minimum for the particular air velocity. There are an infinite number of combinations of velocities and angles which will satisfy the resultant velocity and angle; but any change in one component will correspondingly affect the other. An apparently slight change made without analyzing the conditions is liable to lead to unexpected results. As there are necessarily certain angles and velocities which will give the best results, as well as those which give unreasonable results, the designer must use a certain amount of judgment in coping with the problem.

The pressure necessary to impress the velocity of 103 ft. per sec. upon the gas will be

$$H = 0.19245\,p_l\,(v^2 \div 2g) = 0.4119 \text{ in. of water}$$

The velocity of the waste gases through this port, based upon the proportional division between the ports, will be

$$v = 1244 \div 10.14 = 122.7 \text{ ft. per sec.}$$

The draft required by this velocity will be

$$H = 0.19245 \times 0.01199\,(122.7^2 \div 64.4) = 0.5392 \text{ in. of water}$$

The velocity of the waste gases through the air port will be

$$v = 1855 \div 35.85 = 51.74 \text{ ft. per sec.}$$

The draft required will be

$$H = 0.19245 \times 0.01199\,(51.74^2 \div 64.4) = 0.09598 \text{ in. of water}$$

The chimney effect of the checkers and uptakes available for impressing velocity upon the entering gas at the port was 0.4887 in. of water, which is slightly greater than the pressure required. This is due to the high checker chamber. Had there been a deficiency here, it could have been made up by increasing the pressure upon the gas producer.

The draft depression required to remove the waste gases from the heating chamber will be:

| Inches of Water | Gas on Waste Gas | Air on Waste Gas |
|---|---|---|
| Depression required at junction of flues.. | 1.2674 | 0.8491 |
| Depression required for port velocities.. | 0.5392 | 0.0960 |
| | 1.7966 | 0.9451 |
| | 0.0203 | |
| Draft depression required at base of chimney | 1.8169 in. of water | |

The height of the stack will be based upon the assumption that the furnace will be workable by chimney draft, with the waste-heat boiler out of ser-

*Box 92, Newark, N. J. This is the fourth of five articles on this subject. The first appeared March 2, page 577; the second, March 16, page 717; the third, March 30, page 853.

vice. The temperature at the base of the stack will be 1165 deg. (630 deg. Cent.) and the volume of waste gases to be handled is 451 cu. ft. at 32 deg. Fahr., 29.92 in. barometer. The chimney will be proportioned as follows:

| | |
|---|---|
| $t$ = average temperature of gases in chimney, Deg. Cent. | 600 |
| Deg. Fahr. | 1,112 |
| $1 + at$ = gas factor | 3.202 |
| $Q_t = Q_o \times (1 + at)$ = average volume of waste gas, cu. ft. | 1,444 |
| $p_t = p_o \div (1 + at)$ = average weight, lb. per cu. ft. | 0.025731 |
| $A$ = area of chimney, sq. ft. | 44.17 |
| $d$ = diameter of chimney, ft. | 7.5 |
| Assumed to give an average velocity of approximately 30 to 35 ft. per second (10 m 00, about). | |
| $v_t = 1444 \div 44.17$ = ft. per sec. velocity | 32.69 |
| Temperature of external air assumed at, Deg. Cent. | 30 |
| Deg. Fahr. | 86 |
| $1 + at$ = gas factor for this temperature | 1.110 |
| $p_{air} = 0.0805 \div 1.110$ = lb. per cu. ft. | 0.07251 |
| $p_{air} - p_{gas} = 0.0725 - 0.0257$ = lb. differential per ft. | 0.0468 |
| Inches of water differential per ft. = $0.0468 \times 0.19245$ = | 0.009007 |
| Frictional loss in chimney, inches of water = $F = 0.001027 \times \frac{23.56 \times 215}{44.17} \times 32.69 \times$ | |
| $0.0257$ = | 0.09896 |
| Depression required at base of stack | 1.8169 |
| | 1.91586 |
| Height of chimney required = $1.916 \div 0.009$ = ft. | 213.00 |

Additional chimney height might be desirable to supply a bigger margin for increased draft resistance in the checkerwork at the end of the campaign. A different fuel or a different method of operation than was assumed will modify the foregoing figures, but this method of analysis is applicable, not only to such cases, but, likewise, to the design of other types of regenerative furnaces.

In connection with the reversing valves, a factor of importance is the depth of the water seal. In the case of the gas valve, this seal is exposed upon one side to the pressure within the gas main, while the other is influenced by the draft depression at the valve. The air valve seal is influenced by the stack depression. In the case of the gas valve, the gas pressure will be some 0.10 in. of water or more, and the draft depression about 1.8 in. of water, making a total differential of about 2.00 in. of water. Gases, when their flow is interrupted, have water's tendency to produce a rise in pressure. Therefore, with a 3-in. water seal, only 1 in. of which is effective, there is the possibility of a blow through.

Practically all reversing valves present more or less of a direct connection between the gas main and the stack flue or the air during reversal, unless special dampers or other means are provided to prevent this. Some of the devices, designed to operate dampers for this purpose, are so arranged that the water seal on the valve is broken, before the dampers have cut off either the gas main or the chimney flue. There is, however, no particular difficulty in arranging a mechanism or a valve which will completely cut the furnace and flues off from the stack and the air during reversal.

One of the main reasons why open-hearth progress has been very slow arises from the fact that space around the valves is limited, and it is practically impossible to secure the necessary clearances to install different equipment, or to provide the necessary rearrangement of the flues. This obstacle is somewhat difficult to overcome. The first installation of a new device or idea is always difficult to secure, and in many cases it is the only one made.

A certain amount of producer gas will be lost every time the furnace is reversed. The gas regenerator, etc., are full of gas prior to reversal. A portion of this trapped gas passes into the furnace and burns, but part of it will be drawn backward into the chimney flue. This loss cannot be eliminated. The more frequently the furnace is reversed the greater this loss.

## Foreign Papers at the Foundrymen's Convention

Papers by foreign foundrymen, to be presented at the annual convention of American foundrymen at Rochester, June 5 to 9, which are in addition to those announced in THE IRON AGE, April 6, are the following:

"Belgian Method of Making Typewriter Frames," by J. Leonard, president Association Technique de Fonderie de Liége, Belgium.

From the Association Technique de Fonderie de France, four papers.

"Electric Furnaces," by R. Sylvany.

Discussion of "Triplex Process of Making Malleable Castings," by T. Levoz.

"Destruction and Reconstruction of French Foundries," prepared by members of the French Association.

In addition to the above exchange papers, a paper on "European Molding Machine Practice vs. American Molding Machine Practice" by E. Ronceray of Ph. Bonvillian & E. Ronceray, Paris, will also be read.

## Annual Meeting of Iron and Steel Institute

The annual meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, Great George Street, London, on Thursday and Friday, May 4 and 5. The following papers are to be submitted:

Presidential address.

"Hydrogen Decarburization of Carbon Steels, with Notes on Related Phenomena," by C. R. Austin.

"The Inner Structure of the Pearlite Grain," by N. T. Belaiew.

"Effect of Oxidizing Gases at Low Pressures on Heated Iron," by H. C. H. Carpenter and Miss C. F. Elam.

"British Siemens Furnace Practice," by F. Clements.

"Influence of Dissolved Oxides on Carburizing and Hardening Qualities of Steel," by E. W. Ehn.

"On Delayed Crystallization in the Carbon Steels: the Formation of Pearlite, Troostite and Martensite," by A. F. Hallimond.

"On the Constitutional Diagram of the Iron-Carbon System, Based on Recent Investigations," by K. Honda.

"On the Stepped A 1 Transformation in Carbon Steel During Rapid Cooling," by K. Honda and T. Kikuta.

"Notes on Blast Furnace Filling," by D. E. Roberts.

"Recent Developments in Power Production," by D. Selby-Bigge.

"X-Ray Studies on the Crystal Structure of Steel," by A. Westgren and G. Phragmen.

"Formation of Globular Pearlite," by J. H. Whiteley.

"On the Heat of Transformation of Austenite to Martensite, and of Martensite to Pearlite," by N. Yamada.

The autumn meeting of the institute will be held in London, Sept. 5, 6 and 7.

An invitation has been extended to the institute by L. Greiner from the council of the Association of Engineers of Liège to participate in an international congress which is to be held at Liège, June 11 to 16, in celebration of the 75th anniversary of the association.

## Convention National Association of Purchasing Agents

The largest aggregate purchasing power in the world is said to be that of the membership comprising the National Association of Purchasing Agents, representing the leading industrial plants of the United States. The purchasing agents will assemble this year for their seventh annual convention and exhibition at Rochester, N. Y., May 15 to 20.

The buildings of Rochester's "Exposition Park" have been engaged for the convention, in order to house a representative exhibition of products, for which many concerns have already engaged space. For example, the Eagle-Picher Lead Co. has arranged to have a booth showing a complete plant in miniature, engaged in manufacturing white lead.

Speakers of national reputation will address the convention. The group meetings and technical demonstrations will cover many subjects, such as iron and steel, cotton, lumber, wool, paper. These group discussions will be led by experts in the various lines. It is estimated that there will be in attendance at least 1200 active purchasing agents.

## Program for Steel Treaters' Sectional Meeting at Pittsburgh

For the second sectional meeting of the American Society for Steel Treating, to be held in Pittsburgh, May 25 to 27, the following program has been arranged by the Pittsburgh chapter:

*Thursday, May 25*

11 a. m. to 1 p. m.—Auditorium, Bureau of Mines.
Informal gathering and registration of out-of-town members and guests.

1:30 p. m. to 4:30 p. m.—Auditorium, Bureau of Mines. Address of welcome by chairman of Pittsburgh chapter, response by National President F. P. Gilligan.

Technical session presided over by past chairman of Pittsburgh chapter with papers by:

Professor McIntosh, Carnegie Institute of Technology, "Fiber in Steel and Iron."

W. B. Crowe, metallurgist, Carnegie Steel Co., "Mass Influence on Heat Treating."

7 p. m.—University Club, banquet. Addresses and music relayed over KDKA, Westinghouse Radiophone Station. Toastmaster: G. H. Neilson, president, Braeburn Steel Co. and past president, Western Pennsylvania Engineers Society. Speakers: Doctor Bowman, chancellor, University of Pittsburgh; Dr. J. A. Mathews, president, Crucible Steel Co. of America; Prof. F. Crabtree, chairman, American Institute of Mining and Metallurgical Engineers, Pittsburgh division, and vice chairman, Western Pennsylvania Engineers Society: "History of Metallography and Heat Treatment of Iron and Steel." Followed by impromptu speeches by guests representing prominent local industries. Music by Greater Pittsburgh Quartet.

*Friday, May 26*

9 a. m. to 12 m.—Visits to steel mills and manufacturing plants.

1:30 p. m. to 4:30 p. m.—Auditorium, Bureau of Mines. Technical session, presided over by chairman of visiting section with papers by:

Mr. Cox, R. D. Nuttall Co., "Abrasive Qualities of Carbon and Alloy Steels."

J. A. Succop, Heppenstall Forge & Knife Co., "The Importance of Properly Heating and Cooling Steel."

Mr. Smith, Union Spring & Mfg. Co., New Kensington, Pa., "Manufacture of Springs."

Mr. Grossman, Electric Alloy Steel Co., Youngstown, Ohio, "Shrinkage of High Speed Steels."

A smoker is scheduled for Friday evening with a directors' meeting on Saturday.

## Engineering Meetings in April

Among engineering meetings held and to be held in April by various sections of the American Society of Mechanical Engineers are the following:

Metropolitan Section in New York at the Engineering Societies Building, April 14, at which the subject was the Muscle Shoals development, with addresses by Brig. Gen. Harry Taylor, U. S. A., C. W. Stowell, American Cyanamid Co., and General C. C. Williams, Chief of Ordnance, U. S. A.

Chicago Section, April 17 (Secretary J. D. Cunningham, Republic Flow Meters Co., 2240 Diversey Boulevard, Chicago), investigations on heat insulation by E. R. Weidlein, Mellon Institute, Pittsburgh.

Philadelphia Section at Drexel Institute, April 18, (Secretary, Prof. W. H. Kavanaugh, Towne Scientific School, University of Pennsylvania), wireless telegraphy with an address by P. S. Chubb, Pittsburgh.

New Haven branch, April 26, (Secretary, Prof. S. W. Dudley, 400 Temple Street, New Haven), fatigue of metals, by Prof. H. F. Moore, University of Illinois.

Cincinnati Section at 25 East Eighth Street, April 27, (Secretary, Prof. J. T. Faig, Ohio Mechanical Institute, Cincinnati), bearings and lubrication with addresses on the theory of lubrication and bearing material by Forrest E. Cardullo, G. A. Gray Co., Cincinnati, and on ball bearings by Dr. Tobias Dantzig, engineering department, S. K. F. Industries.

Washington Section, Interior Department auditorium, April 27, (Secretary, Carroll V. Oakes, Federal Power Commission, Department of the Interior Building, Washington), turbine development by F. H. Rodgers, hydraulic engineer, William Cramp & Sons Ship & Engine Building Co., and efficient use of water resources by electrical interconnection of utilities, by E. C. Bebb and Charles E. Oakes, of the Federal Power Commission.

Colorado Section, at Metropole Hotel, Denver, April 28, (Secretary, William Lester, Vulcan Iron Works, Denver), modern boiler combustion by W. J. Reilly, Babcock & Wilcox Co.

## Boston Section A. S. M. E.

The Boston section American Society of Mechanical Engineers on Saturday evening, April 8 held a joint meeting with the engineering students of the Massachusetts Institute of Technology, Harvard Engineering School, Tufts Engineering School, Wentworth Institute and Northeastern College at the Massachusetts Institute of Technology, Cambridge, Mass. Approximately 600 attended.

At a business meeting held just previous to the regular meeting, M. M. Osgood, Monks & Johnson, Boston, architects, and Walter N. Cargill, the Lumsden & Van Stone Co., Boston, piping contractor, were elected members of the executive committee for a term of three years to succeed Alfred S. Kellogg and D. K. Dean, both of Boston.

Dean Dexter S. Kimball, president American Society of Mechanical Engineers, was the guest of the evening. He spoke on the duty of the engineer as a citizen, discussing the growth of engineering and its influence on civilization, and pointing out some of the industrial difficulties arising as a result of the engineering and industrial development. President Kimball urged all engineers to familiarize themselves with social and industrial problems, and emphasized the necessity of recognizing the human element in industry.

## COMING MEETINGS

### April

**American Gear Manufacturers' Association.** April 20, 21 and 22. Annual meeting, Hotel Lafayette, Buffalo. Secretary, F. D. Hamlin, 4401 Germantown Avenue, Philadelphia.

**American Supply and Machinery Manufacturers' Association** and **Southern Supply & Machinery Dealers' Association.** Joint meeting. April 24 to 26, Birmingham. F. D. Mitchell, 233 Broadway, New York, is secretary of the American association and A. M. Smith, Smith-Courtney Co., Richmond, Va., is secretary of the Southern association.

**National Machine Tool Builders' Association.** April 25 and 26. Spring convention, Hotel Traymore, Atlantic City, N. J. General manager, E. F. DuBrul, 817 Provident Bank Building, Cincinnati.

**Society of Industrial Engineers.** April 26 to 28. Spring meeting, Hotel Statler, Detroit. George C. Dent, business manager, 327 South La Salle Street, Chicago.

**American Electrochemical Society.** April 27 to 29. Spring meeting, Baltimore. Acting secretary, Dr. Conlin G. Fink, 101 Park Avenue, New York.

### May

**Iron and Steel Institute.** May 4 and 5. Annual Meeting. Quarters of Institution of Civil Engineers, London, England. Secretary, George C. Lloyd, 28 Victoria Street, S. W. London.

**The National Supply and Machinery Dealers' Association.** May 8, 9 and 10. Seventeenth annual convention, Marlborough-Blenheim Hotel, Atlantic City. Secretary, T. James Fernley, 505 Arch Street, Philadelphia.

**American Society of Mechanical Engineers.** May 8 to 10. Spring meeting, Atlanta, Ga. Secretary, Calvin W. Rice, 29 West Thirty-ninth Street, New York.

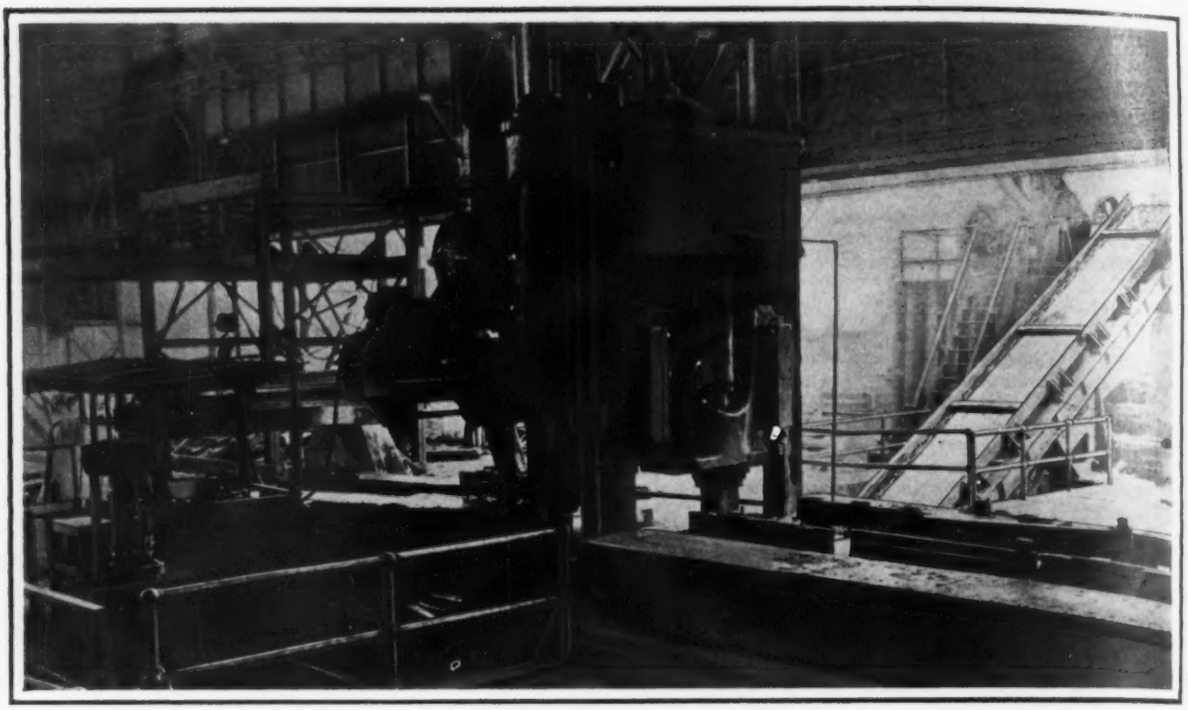
**National Association of Manufacturers.** May 8, 9 and 10. Annual Convention. Waldorf-Astoria Hotel, New York. General offices, 50 Church Street, New York.

**National Foreign Trade Council,** May 10 to 12. Convention Hall, Philadelphia. Secretary, O. K. Davis, 1 Hanover Square, New York.

**National Sheet Metal Contractors' Association.** May 15 to 19. Convention and exposition, Cadle Tabernacle, Indianapolis.

**National Association of Purchasing Agents.** May 15 to 20. Annual convention and exposition. Exposition Park, Rochester, N. Y. Secretary, H. R. Heydon, 19 Park Place, New York.

**American Iron, Steel & Heavy Hardware Association.** May 23 to 25. Annual meeting, Hotel Washington, Washington. Secretary, A. H. Chamberlain, Marbridge Building, New York.



# HYDRO-ELECTRIC BLOOM SHEAR

## New Method of Operation Devised for Use in Mills Without Steam Power

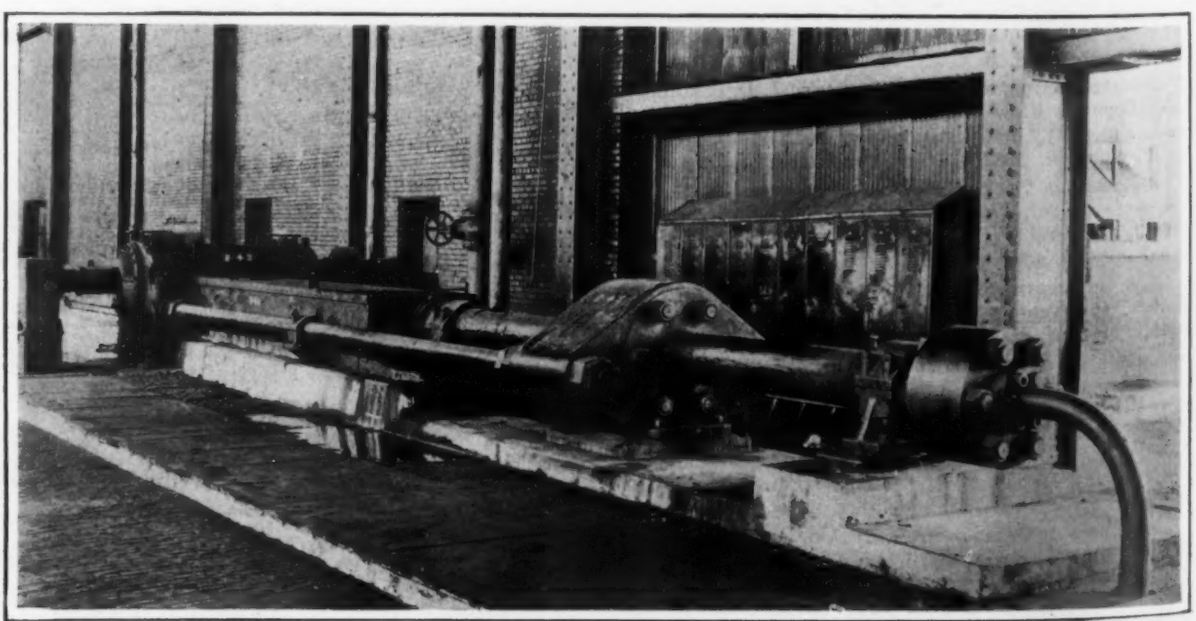
TO handle heavy cutting of hot blooms direct from blooming mills, in plants which are driven entirely by electricity and have no steam equipment for power or auxiliary purposes, a new form of shear has been developed by the United States Engineering & Foundry Co., Pittsburgh. The first unit has already been installed by the Tennessee Coal, Iron & Railroad Co., where the photographs here reproduced were taken. The design was intended to provide a powerful hydraulic shear with the advantages and speed of a steam hydraulic shear. The new element which permits this result consists of a hydraulic intensifier driven by electricity.

Power to the intensifier is supplied by a fly-wheel motor-generator set to a direct-current shunt-wound reversing motor of 700 hp., with a full-load speed of 86 r.p.m. Direct connected with the motor is a forged steel pinion of 16 in. pitch diameter, driving a cast steel rack of 41 teeth with 30 in. face and 4.57 in. pitch. This rack runs in cast iron slide beds on either side of the pinion housing.

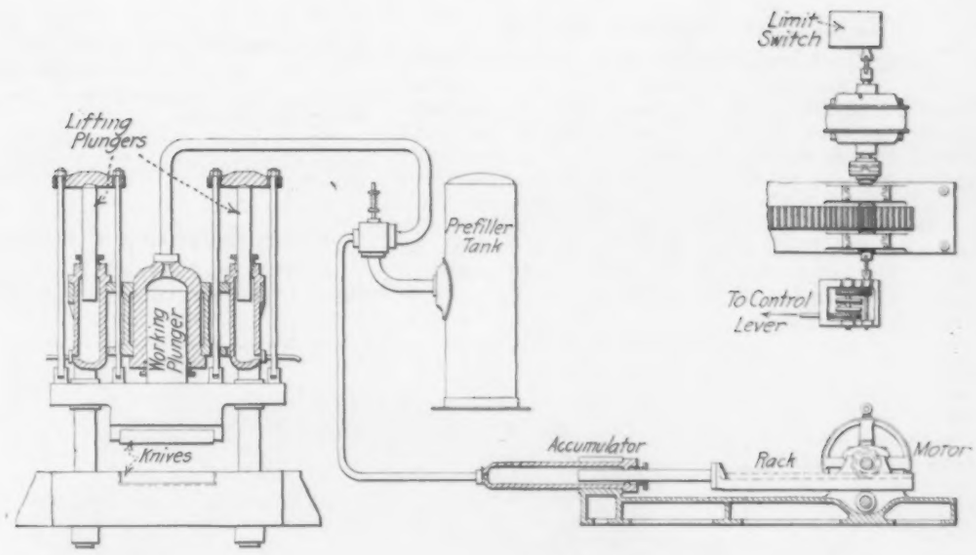
To one end of this rack is attached a hydraulic ram with a working stroke of 14 ft. This runs in a cast steel intensifier cylinder, shown at the right. The cylinder, being long and slender, was made in halves connected by the special joint shown in the center. It is held in a heavy semi-steel housing anchored to the pinion housing by two forged steel tie rods. The intensifier unit has a length of about 63 ft. over all.

In the shear proper, a cast steel base carries the bottom knife and seat, while four columns, 12 in. square and spaced at 8 ft. by 3 ft. centers, support a heavy box section cast steel entablature. This is bored to carry three cylinders, the main cutting cylinder and two smaller lifting or pull-back cylinders for raising the upper knife head. The entablature is faced on the lower side also to carry the gag cylinder.

Between the entablature and the base, the cast steel top knife head is fitted with bronze liners for guiding it on the columns. This knife head carries the cast



Mechanical and Hydraulic Parts of the Intensifier Proper. The motor is behind the brick wall. The rack is under the box-like cover next the motor shaft. The cylinder is supported at center and held to the pinion by the spanner and tie-rods shown




Diagrammatic Layout of the System, Showing How the Motor Control Ties Into the Cutting Knives Through the Motor, Rack, Accumulator, Pipe and Plunger

steel gag, shown on the front in one photograph, which holds the bloom rigid on the bottom knife block while it is being sheared. By means of a cast steel retaining ring, the knife head is attached to the main hydraulic ram, which is of special close grained cast iron with a finely finished surface. The ram is machined to a concave lower surface to fit a steel pad which is convex on top and flat beneath. This permits self-alinement in operation.

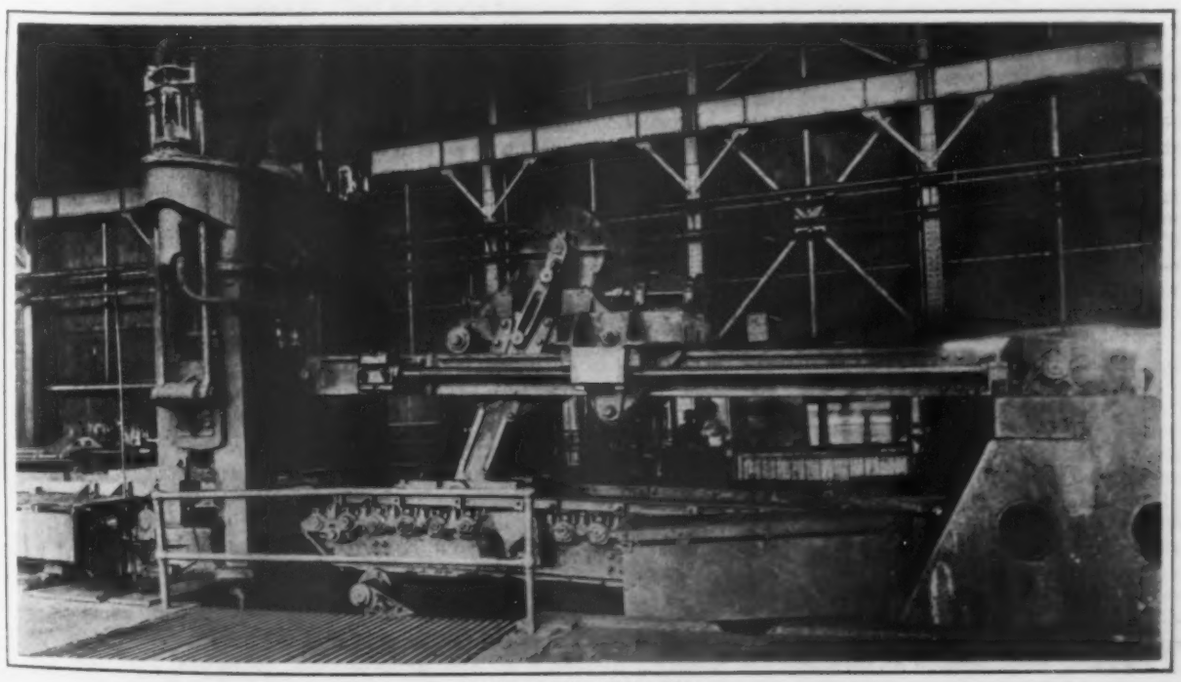
Hydraulic pressure for the lifting cylinders and the gag cylinder is supplied by a separate hydraulic accumulator directly connected to them by pipes. They are under constant pressure of 1000 lb. per sq. in. Each lifting cylinder is attached to the top knife head by a yoke and two pull-back rods, the bottom ends of which are held by a pin to a dead eye bearing bolted to each side of the knife head.

Low pressure water for the intensifier and the main hydraulic cylinder is supplied from a prefiller tank under an air pressure of about 60 lb. per sq. in. This makes the whole water system a closed system, in which the only water wasted is that lost by leakage.

To open the knives to cut, the hand control lever is pulled back, causing the intensifier ram to withdraw from its cylinder. The space thus vacated is filled by water from the main cylinder, as the pull-backs, under constant pressure, lift the top knife head. This forces the main ram up into the main hydraulic cylinder in direct proportion to the movement of the intensifier ram, one foot of movement in the latter giving approximately one inch of movement in the top knife head.

When the knife head is high enough to permit the bloom, to pass between the knives, the hand lever is held, to arrest the upward movement of the knife head until the bloom is in position for the cut. Pushing the hand lever forward reverses the intensifier motor and brings the knife head down to shear the bloom. The maximum hydraulic pressure generated by the intensifier is about 5000 lb. per sq. in., which gives a maximum pressure between shear knives of 1250 tons. This force is sufficient to cut a hot slab of steel 12 in. thick and 4 ft. wide, or a bloom 20 in. square. The power stroke of the shear for one stroke of the intensifier is 14½ in. A double stroking device is provided for cutting sections thicker than this. The shear has an opening of 24 in. vertically, with knives 54 in. wide, the over-all height being 23 ft.

The movement of the top knife can be stopped at any point, whether going up or going down. This is done by stopping the movement of the hand lever. In this particular case the intensifier is at some distance from the shear, this condition being required by the layout of the mill.

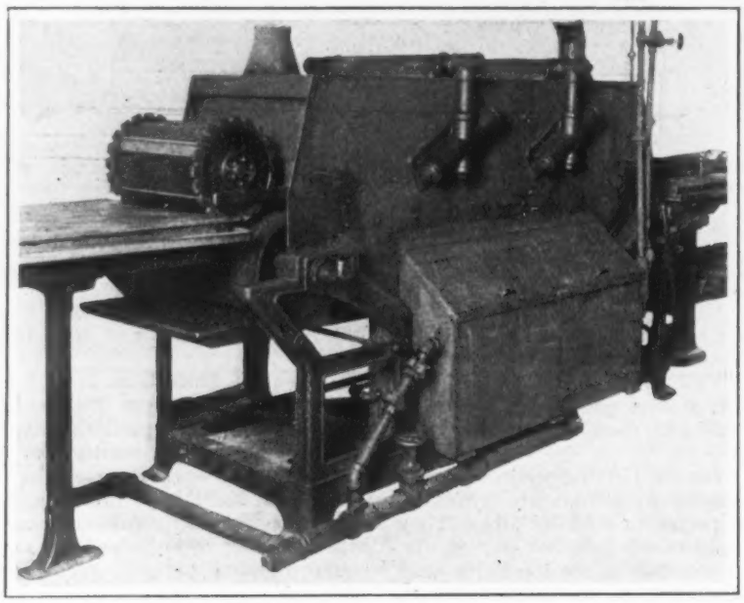


Delivery Side of the Shear

## Metal Parts Washing Machine

A machine for washing and cleaning metal parts in process and designed to combine in one unit the advantages of conveyor, tumbling and hand operated machines has been placed on the market by the Colt's Patent Fire Arms Mfg. Co., Hartford. It is designated as the Autosan, model 21, and was originally evolved in the company's plant for use on its own work.

The general construction may be noted from the accompanying illustration. Work up to 20 in. wide by 14 in. high can be cleaned, the parts being handled on trays or left on the racks commonly used for work in progress through the factory. Operation is continuous, the work being placed on the moving conveyor and emerging from the machine thoroughly washed. The machine is driven by a 2-hp. motor and is entirely self-contained. Work placed on the conveyor passes through two sets of sprays operating on both sides, top and bottom, thus assuring a positive wash regardless of the shape of the work. The travel of the conveyor is either at 10 ft. or 17 ft. per min., the former being recommended as it permits the parts to remain in the solution longer and enables one man to handle the work. The number of trays that can be put through the machine per hour depends upon the size of the trays.



Metal Parts Washing Machine. Tumbling barrel at left is for small parts such as screws, small stampings, etc., that cannot be racked

The conveyor is controlled by a lever and can be started or stopped at will. This has no effect on the sprays however as they act independently and continue to function as long as the motor is in operation. An automatic trip mechanism is provided which stops the conveyor and prevents damage in case any of the work should fall partly through it. Should an article fall completely through the conveyor, it will be caught in the chip trays below and not go into the tank.

A special feature is the rotating tumbling barrel, shown at the left in the illustration. This is for use where there are large quantities of small parts that cannot be racked, such as screws, nuts, small stampings. The barrel has a positive traveling speed and tumbles the parts very slowly, permitting every piece to be washed thoroughly. As the barrel leaves the machine it is caught in a position that permits of placing a box or tray beneath without having to lift or hold it in anyway. In certain classes of work it has been found that with the use of four barrels 70 tons of material can be handled in a week of 50 hours.

The pump is of special design and is self contained. It has two separate compartments and impellers, one set for each tank and is accessible for cleaning. There are two tanks, each of which hold about 25 gal. of washing solution. The trays provided for catching the large particles of chips or dirt can be removed conveniently for cleaning. Each tank is also equipped with a simple screening arrangement to prevent the settling of the lighter particles, preventing foreign material from being circulated through the pumps.

The spray chambers are mounted on the outside of the hood to facilitate cleaning which is accomplished by removing plugs located at each end and inserting a wire wound brush. A noiseless steam arrangement is provided in each tank. After the solution has been heated sufficiently the large steam valve is closed and a by-pass with a small needle valve is opened. This maintains the temperature of the solution while operating the machine.

The over-all dimensions of the machine are 116 in. long, 44 in. wide and 61 in. high. The net weight is 2700 lb.

## Warning Regarding a German Selling Method

ROTTERDAM, HOLLAND, March 27.—An instance has recently been noticed which indicates how carefully selling agreements from German manufacturers must be examined. It appears that a manufacturer in Holland nearly lost an order on account of a German competitor's having agreed to sell on the so-called "Festpreise" (fixed prices). The agreement was taken to mean that prices would not be raised before delivery, but in reality the opposite was the intention.

The sentence in the selling offer was as follows: "Die Preise sind Festpreise, d. h. die Materialien werden zu dem in Kostenanschlag eingesetzten preis berechnet, unbeschadet innerhalb der Lieferungszeit eintreten der preiserhöhungen." A credulous reader would not take the trouble to look up the word "unbeschadet" but take it for granted that it merely emphasized the matter of fixed prices. If, however, we look up the exact meaning of the word "unbeschadet," we find that it means "exception made for" or "all my rights being reserved in case, etc." Consequently the sentence really means that the prices are fixed except that the manufacturer keeps his right to raise the prices. Your correspondent would warn buyers of German goods to be careful of such restrictive stipulations.

German iron prices were generally raised 1500 marks per ton on March 1, mostly as a result of the strength in coal prices, and it is now expected that prices will go still higher. An advance of 500 marks is what is expected at this writing. German plants are filled up with orders sufficient for several months' operation and many are not booking until the price situation is clearer.

In Belgium on March 1, 22 of the 54 plants of the so-called iron industry were working, against 18 on Feb. 1 and 49 of the 55 on March 1, 1913. The average steel production per day amounted to 3215 tons on March 1 against 2470 tons on Feb. 1 and 6611 tons on March 1, 1913.

## New All-Water Service

ST. LOUIS, April 18.—The Federal Barge Line operating between St. Louis and New Orleans, and the Gulf States Shipping Co., operating between New Orleans and Galveston, have made an arrangement to establish an all-water service between St. Louis and Galveston, effective Thursday.

P. W. Coyle, traffic manager of the St. Louis Chamber of Commerce, said that the principal article of shipment at first probably will consist of iron and steel products.

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ESTABLISHED 1855

# THE IRON AGE

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## Steel Output and Coal Strike

The appearance of steel production being menaced by the coal strike, or rather by the strikes at non-union mines instigated by the United Mine Workers, must be considered in the light of the rapid increase that has lately occurred in steel production. Were production to be curtailed by a material percentage, which is unlikely, it merely would set back the industry to the rate of a few weeks ago. Indeed, one of the first items of iron and steel news in connection with the strike was that orders for the blowing in of certain blast furnaces had been suspended. This was a restriction of production that had not begun.

The increase in steel production since December has been phenomenal and unprecedented, and it scarcely can be doubted that part of the increase in the buying of steel was due to consumers desiring to fortify themselves against the possibility of the coal strike interfering with the production and shipment of steel.

The record of ingot production has been remarkable. In the past four months the average rate per working day of the 30 companies which make monthly reports to the American Iron and Steel Institute, with the increase, has been as follows:

| | Daily Output, Gross Tons | Increase Over Previous Month Tons | Per Cent |
|---|---|---|---|
| December | 54,884 | ..... | ... |
| January | 61,326 | 5,442 | 9.9 |
| February | 72,709 | 11,383 | 18.6 |
| March | 87,806 | 15,097 | 20.8 |

Here was even more than a geometrical progression. Using the tonnage increase in March rather than the percentage increase as a basis, the rate of ingot production by the steel industry as a whole would have been 38,000,000 tons a year by April 15, equal to a 25 per cent gain over the average rate in 1912 or 1913, the two greatest steel years before the war, and only 7 per cent under the average rate in 1920.

Viewed in connection with the absence of stocks in the hands of buyers at the end of the old year and the gradual rather than sudden improvement in business generally, the production figures indicate that some of the steel made in February and a considerable proportion of the steel made in March went into buyers' stocks. Consumption, therefore, could be supported with a much smaller production than was being made April 1. Steel may not be distributed exactly right geographically or by products, but a general shortage of steel is inconceivable.

## Unemployment and Business Cycles

At Washington last week a conference was held between editors of the leading business journals of the country and a committee which is studying unemployment in its relation to business cycles. The committee is the one which Secretary Hoover appointed at the Unemployment Conference of last fall and consists of six members of that conference, with Owen D. Young as chairman. Joseph H. Defrees, of the Chamber of Commerce of the United States, is another member and there are two representatives of labor. The committee decided on a study of the causes of alternate periods of expansion and depression in industry and that it be undertaken through the National Bureau of Economic Research, of which Dr. Wesley C. Mitchell is director.

The conference with business paper editors was for the purpose of uncovering sources of information which would be helpful to the investigators. The outline of the inquiry presents three broad divisions: 1, a diagnosis of unemployment; 2, relation of unemployment to business cycles, and, 3, proposed palliatives and preventives of cyclical unemployment. What the committee particularly asks of industrial companies is suggestions that will make the third section of the report of the greatest practical value. In particular the investigators want to know of cases of long-range planning of construction work, of methods used for stabilizing production, and of the extent to which use is made of statistical indexes of business conditions.

The inquiry is one in which the iron and steel and metal-working industries might be presumed to have a large stake. The feast and famine habit

of the steel trade has passed into a proverb, and endless discussion has been given to ways and means of reforming the habit. Railroad buying and steel construction have long been regarded as keys to the solution of the problem. In years past steel manufacturers have urged the railroads to come into the market in times of depression and low prices, and there has been much enlarging on the advantages of buying at such times. Generally the railroads have replied that inability to finance when confidence was shaken has kept them out of the steel market at such times, or if money could be had the terms were so burdensome that borrowings had to be kept to a minimum.

Among steel manufacturers themselves, the old Carnegie organization was conspicuous for carrying on new construction in times of depression. The Steel Corporation has followed the same policy to a considerable extent. While it spends its new construction appropriations faster in good times than in bad, it has always had a relatively larger amount of new construction in progress in hard times than its competitors. And among the latter the Bethlehem Steel Co. has been conspicuous for considerable expenditures for new plant when the outlook for business was not good.

At the Washington conference last week Dr. Mitchell spoke of the desire of the National Bureau of Economic Research to have details of any methods adopted by manufacturers in "combatting depression." It is to be said that whatever has been done in the steel trade in the prosecution of extension work in hard times has been prompted by self-interest—just as in the erection of office buildings or other new construction when costs are low—and not from any design to lend a hand in fending off depression. Similarly manufacturers and dealers do not respond to exhortations to "Buy now" from a sense of obligation to restore business activity. Public work may be undertaken and often is undertaken in times of depression, with the definite and primary purpose of giving employment to men out of work, but public policy and corporation policy must be sharply differentiated in any study of the business cycle. There is a certain degree of conflict, in fact, between two departments of the inquiry now being directed from Washington. To the degree that success is attained in discovering "preventives of cyclical unemployment" to that very degree will prices be stabilized and the incentive to the planning of construction work in times of depression be eliminated.

One thing can be emphasized in connection with the work Dr. Mitchell and his associates have undertaken: it definitely aims to do something practical for business and not simply to get material for makers of charts and diagrams. It courts and merits the co-operation of industry. Of questionnaires there is no end, but the present one should not be ignored on that account. So many hard-headed American business men were swept off their feet by what happened in 1919 and 1920 that this effort at forearming against a repetition of that disastrous surprise should find a ready-made body of helpers right at the start.

## Export or Home Consumption

A fallacy that must be dispelled in the work of putting our foreign trade on a sound foundation is that "the United States is a country of excess production." The fallacy arises through generalizing from a few particulars. We have some industries that are able to produce more goods than the people are naturally disposed to consume, but these industries are, from that viewpoint, simply overdeveloped.

The aim of a country, as of an individual, is to save, to accumulate. If three-fourths of a man's income is sufficient to provide for his every-day necessities, he can save one-fourth and eventually build a house. If three-fourths of a country's man-power is sufficient to provide the everyday necessities for the entire population, the remaining fourth can be employed in making improvements, by way of permanent construction.

The real fact is the United States has such natural resources and such efficient methods that when the people work hard they can save a large part, perhaps 20 or 30 per cent, of the product of their labor. To regard this excess as necessarily in the form of manufactured goods is to confuse the case. Considering "production" in the larger sense, as being of goods or works of construction or service, the excess over every-day requirements is a saving, an accumulation, and it is purely an expedient to put it in the form of exportable merchandise.

Resort to this expedient is desirable from the viewpoint of the general good, if payment in suitable form can be secured. Otherwise it is not. The payment may be in the form of ownership in property abroad. For illustration, we may export rails and electrical machinery to a South American country and thereby become part owner in an electric railroad. We have saved and invested in an electric railroad located outside the United States. Why not have our railroad in the United States instead?

For another form of expedient, assume that our normal requirements are three-quarters of a billion dollars' worth of furniture each year and carpets to the same value, but that we are a little better fitted for making furniture than carpets. Then we might make a billion dollars' worth of furniture and export 25 per cent of it, buying in return a quarter billion dollars' worth of carpets, whereby we should need to make only half a billion dollars' worth ourselves, and could use the labor that would otherwise be used in making carpets in constructing something of permanent utility, such as bridges and buildings.

For a proper and legitimate sale to be consummated it is necessary not only that the buyer be willing to buy but that he be able to pay. If it is desirable for us to exert ourselves to our possible foreign customer in position to pay for our merchandise, it is so only through its being easier

to make him able to pay us than it is to enable an additional American customer to buy the goods. The essence of foreign trade is that the foreign customer has something that we want. If he has nothing that we want, then we should keep to ourselves the results of our ability and man-power.

The prevalence of the notion that the United States should export because it is "a country of excess production" is due in part to our agricultural experience. In the past, when our population was smaller and our soil more fertile, we very readily could produce an excess of foodstuffs. A man's work went farther in producing foodstuffs than in producing fancy silks, and it was advantageous to exchange wheat for silk. We do not have similar disparities to-day. The excess power that is meant when the phrase "excess production" is employed will exist only when we are working harder than at present, and perhaps the excess power can be used in construction work at home.

## Steel for South America

A decided change has taken place in the proportion of iron and steel which South America is taking from the United States as compared with Great Britain—a change which is not to the advantage of American export trade. Official statistics for 1913, 1920, 1921 and the first two months of this year show at a glance what has been taking place:

*Iron and Steel Exports to South America*

| | From Great Britain, Gross Tons | From the United States, Gross Tons |
|---|---|---|
| 1913, monthly average | 27,400 | 20,600 |
| 1920, monthly average | 9,400 | 24,800 |
| 1921, monthly average | 6,650 | 15,550 |
| January, 1922 | 21,300 | 7,700 |
| February, 1922 | 11,900 | 6,300 |

From a commanding position in 1920, American exports to South American countries have fallen from 24,800 tons per month in that year to about 25 per cent of this in the early part of this year and to less than one-third of the pre-war movement. By contrast, British exports to the same countries, after dropping to low ebb in 1921, have suddenly recovered, and in the first two months of this year they were fast approaching pre-war levels. Even Germany in December, 1921, shipped 15,921 tons of steel to South America, or nearly three times the American exports for the same month.

The figures emphasize two important facts: One is the marked recovery in the British export trade, after months of serious strikes and other economic trials. The other is the low point to which American steel has sunk, not only that to South American but to all countries, with the possible exception of Japan. With a capacity much larger than before the war, American foreign trade in iron and steel should not sink below the pre-war volume; rather it should reflect the leadership this country has taken in iron and steel production in all lines. To-day the United States is outranked in volume by Germany, Great Britain and France. South America is a most important market and its purchases of 48,000 tons of iron and steel per month from the United States and Great Britain in 1913 should be exceeded in 1922. Since the results of this year's competition between Europe and the United States for the trade of South America will go far toward determining the line-up in the years just ahead, it is evident that our exporters of steel have a good-sized job cut out for them in these countries to the south.

## Industrial Training and Plant Efficiency

That worth-while results are possible on a large scale from the intensive application of a system of industrial training appears from the recent report of the president of the American Smelting & Refining Co. The problem of meeting the severe conditions following the war was faced and solved in a manner that is of vital interest to all employers. In seeking better production results, a job analysis was made of every operation. Then a scheme of industrial training was formulated which included classes in executive and administrative work as well as foremen and vocational training. Among the results are a closer supervision by plant executives, a reduction of working forces to the minimum, larger output per man employed and improvements in equipment.

In one plant, in the ore-crushing department, 52.2 tons of ore per man per 8-hr. day was the output in October, 1921, as compared with 31.8 tons per man in 1914, and in another plant men in unloading operations averaged 25.3 tons per man per 8-hr. day in October, 1921, against only 9.2 tons per man in 1914.

It is common knowledge that under the changed economic conditions and the attendant unemployment and reductions in wages, output per man has increased at many plants. But there is no assurance that this higher efficiency will outlast the return of normal activity unless executives set themselves definitely to such work as that in which the American Smelting & Refining Co. has been so signally successful.

## Engineers Talk on Keeping Investment Down

Keeping investment down was the subject of a meeting of the New York chapter of the Society of Industrial Engineers, held April 11 at the Engineering Societies' Building, New York.

The production phase of the subject was taken up by Henry R. Boston, production engineer, Scovell, Wellington & Co., industrial engineers, New York, under the title of the "Relation of Investment to Production." The problem of keeping investments in check, he stated, resolves itself into the problem of the attainment of maximum financial efficiency. Financial efficiency he described as the result of the product of the efficiency in the use and design of the various elements of manufacturing process, which include material, equipment, labor, burden and sales and administration. Mr. Boston outlined the problems involved in the first four elements.

Capital turnover in administration and sales was discussed by J. Heywood of Miller, Franklin, Basset & Co., industrial engineers, New York. Dr. Joseph W. Roe, president of the society, took part in the discussion.

E. F. Collins, consulting engineer, industrial heating department, General Electric Co., Schenectady, N. Y., was the speaker at a joint meeting of the Engineers' Society of Western Pennsylvania and the Pittsburgh Chapter, American Society for Steel Treating, at the William Penn Hotel, Pittsburgh, Tuesday evening, April 18. His subject was "Some Applications of Electricity to the Reheating of Steels."

# CORRESPONDENCE

## Hardness Testing and Its Limitations—A Criticism

*To the Editor:* I read with interest and considerable astonishment the paper on "Hardness Testing on a Commercial Scale," by E. F. Lake, published in your issue of April 6, 1922.

The oldest hardness test of metals revealed in the literature is not a rebound test, but a static penetration test (Calvert and Johnson; Memoirs, Phil. Soc. of Manchester, 1850); later on, approximately during 1878, hardness tests of metals were carried out in France by means of a falling tup, faced with a hardened steel knife edge or pyramidal hammer. Some research work of great value was published by Lieutenant-Colonel Martel during 1895 and 1900; he used a falling weight with indenting tools of various forms, mostly of conical shape. In none of these investigations was the height of rebound considered, but only the dimensions of the permanent deformation produced. In Germany, the very valuable essays on hardness and hardness testing by Heinrich Hertz date back to 1880. The static ball indentation test was in use for many years in the rail testing laboratories of the Prussian State Railways before Brinell and Wahlberg published their well-known papers of 1900 and 1901. The rebound principle of a small dropping hammer was used in Germany by Tingberg for a number of years previous to Shore's application for a patent on his scleroscope.

The "sclerometer" mentioned by Mr. Lake as being somewhat different from the scleroscope, but utilizing the same principle, is not known to the writer. There are instruments similar to Shore's scleroscope on the market both in France and in Germany, but none of them have been named "sclerometer"; the only apparatus of this particular name that is known to me is Martens' diamond scratch hardness tester which is usually referred to as "sclerometer."

Brinell testing machines using the lever principle, with or without direct reading indicators, have been made for many years, and it seems that the so-called "Rockwell" hardness tester does not represent any particular advance in the art and science of testing; in fact, instruments of this sort that spring up every now and then and usually disappear rapidly from the market afterward are only bound to mix up an already difficult situation. What good is a Brinell tester that does not permit results in standard Brinell units? The best Brinell machine of the lever type with attachment reading directly in "Brinell units," without using levers and spring in the depth measuring apparatus, is that designed many years ago by Guillery in France. In this device a micrometer screw is used to measure the depth of indentation after the load has been released, and the head of the micrometer screw is divided in "Brinell units."

The auto-punch mentioned by Mr. Lake is absolutely worthless even for shop tests of the roughest kind.

The diamond scratch test has been developed by Martens particularly for the investigation of the comparative hardness of the micro-constituents of metals and alloys. Instruments of this kind, as also the extremely valuable Jaggar micro-sclerometer, belong in an entirely different field of apparatus.

Mr. Lake's remarks under the heading of "Difficulties Encountered" are, of course, well known to everybody in the field. The only point remarkable about this particular section of the paper is that the author dwells upon the fact that "variations occur in metal even when hardness tests are made but a short distance apart," while afterwards he seems to put the main blame on the hardness testing machines and their "misleading results."

Coming to the portion of the article dealing with "Hardness Versus Wear": Who ever heard of "hardness testing when wearing properties are what are really wanted"? If the wearing properties are involved, a test for resistance to wear—which has absolutely nothing to do with hardness—is the only way information on this point can possibly be obtained. Why blame "hardness tests" for the fact that there is no relation between "hardness" and "resistance to wear"? We might just as well blame the Hudson River for flowing into New York bay instead of into San Francisco bay.

A number of excellent "wear testing machines," such as Amsler's, have been on the market for years and have become very popular in industrial laboratories. The sentence "Hardness testing would tell us that steel gears were the best" is without sense, in view of the well known facts just mentioned. Since the scleroscope gives a higher reading on soft rubber than on hard steel, would anybody presume that gears of soft rubber would be "the best"? The properties of manganese steel are too well known to every metallurgist to use them as an argument against the value of hardness testing. A wear testing machine as required in wear tests will bring these characteristics out quite clearly. The "toughness" mentioned by Mr. Lake (Toughness has been defined as the ability to undergo deformation in cold working) is again different from "resistance to wear" and it is only natural that a hardness test does not give any information on this property; it is not expected and not supposed to. A very simple test for "toughness" has recently been developed by Professor Ludwik of Vienna, and it can be carried out by means of an attachment to every Brinell machine.

Reading further what Mr. Lake has to say about "Cast Iron Pistons," I regret to notice that he mixes up with hardness another distinct property, "machinability." One has nothing to do with the other. Everybody knows that aluminum (38 Brinell) is much more difficult to machine than soft steel. High ductility offers considerable resistance to the cutting tool. A very large number of papers (Thieme, Bauer, Keep, Leyde, Reininger, Kessner, Ludwik) have appeared on this subject, and "hardness" specifications for machining qualities are absurd.

Regarding the variations of Brinell hardness in various sections of the connecting rods, the author fails to state how he measured the indentations produced by the machine. I hope he did not use any of the so-called American make "depth gages" and made a reading while the metal was under 3000 kg pressure. A limit of 410 to 440, the middle being 425, seems entirely too narrow even for commercial Brinell testing. No commercial test is more accurate on the average than $\pm$ 5 per cent. Why expect it from a hardness test, when the nature of the material varies at least $\pm$ 5 per cent along the same piece? Differences of "20 points" Brinell do not mean much around a Brinell hardness of 470 to 490; such differences should be considered in percentage. If I could have a chance to explore Mr. Lake's connecting rods magnetically, I could prove to him beyond doubt that his material varied at least 5 per cent along each piece.

Regarding the "Conclusions" of Mr. Lake, I can only repeat that he contradicts himself all through the paper. If the machine was working "perfectly" on these tests, why blame the Brinell method for variations in the material or for not doing things nobody expects it to do? The conclusion that "one cannot work within a range of 30 points" has no meaning unless the range of Brinell hardness is mentioned in which these points apply; for 30 points Brinell around 490 do not mean anything, while around 170 or 140 they mean a whole lot.

As to the closing sentences of the paper, I must say that I agree with Mr. Lake in regard to the great usefulness of the Brinell hardness test, but only if the engineer using it is fully familiar with the limitations of the test. Therefore, I must say that the last sentence, "But to use them where they give misleading results injures their reputation and everybody connected therewith," is perfectly groundless. The Brinell machine does not give misleading results; but some people that are not familiar with the limitations of the test "are being misled" by the results. Why expect that the Brinell test should give any information regarding machining properties and resistance to wear, if it has been definitely proven over and over again that such relations do not exist? Would anybody condemn the tensile test just because it does not show temper brittleness in

chrome-nickel steels? We know that it does not show such brittleness and therefore we make brittleness tests with the impact machine. If we want to investigate wearing properties we have to make wear tests; and if we want to investigate machining qualities, we have to make machining tests. Forms of apparatus for all such tests have been fully developed. Why not use them? HERMAN A. HOLZ.

New York, April 7, 1922.
17 Madison Avenue.

## The Working of American Patents

*To the Editor:* The American patent system is admittedly the best system anywhere in use. American inventors and American inventions have led the world in devising new means of progress in the useful arts and manufactures and American inventors and the American public are generally well satisfied with their patent system. There have been changes in it from time to time but these changes have been slight, so that there has never been a radical disturbance of the system for many years past.

It is now proposed in a bill pending before the Senate Patents Committee to introduce a revolutionary change in our patent system, which has never been tried in this country before, except in one somewhat similar case in 1832 which proved so prejudicial to the interests of the country that that act was quickly repealed.

The present bill, introduced in the Senate by Senator A. Owsley Stanley of Kentucky, proposes to amend the law so that every patent shall include a proviso that if the patent so granted is not worked within a reasonable time from its date of issue, the United States may grant any person a license under the patent, the royalty for such license to be fixed by the Commissioner of Patents or other governmental agencies.

The result of such a bill must be to discourage invention, for an inventor who has spent his time, efforts and money in creating an invention and who has secured his patent, will be met with the additional handicap that unless he is successful in getting his device on the market, his patent rights can be taken away from him by anybody who applies for a license.

The New York Patent Law Association is strongly opposed to this bill, and so is the American Patent Law Association, with a membership extending throughout the United States. The latter association, through its committee, has called attention to many vital objections to the bill:

(1) It strikes at the heart of our patent system, in that it would destroy the exclusive right of the patentee to his invention. This is the distinguishing feature of the patent law of this country that makes it superior to the law of any other country. For this reason, it would be equally bad for the public, the inventor and the manufacturer.

(2) Endless litigation of a new kind would be induced, involving practically all of the questions that arise in infringement suits to-day, and endless controversies in ascertaining what is a "reasonable" time, within the meaning of the act, for working, and what is a "reasonable" royalty in any given case.

(3) It would be difficult, and frequently impossible, for the Commissioner of Patents, or any other governmental agency, to fix a proper license fee. The difficulties and expense of administering such a law would be endless.

(4) It would work a great hardship to one who had spent time and money in developing an invention of which there are several species or alternatives. In many industries, the success that had been purchased at the expenditure of hundreds of thousands of dollars would be appropriated by a competitor, who, having expended nothing, secured a license under any of the patented inventions not embodied in the final form of the machine manufactured; and, with such a license and the knowledge of the patentee's success and how it was attained, it would be a relatively simple matter for competitors, who had been at no expense, to bring out a machine that would actively compete and thereby prevent the patentee from securing an adequate return on his enterprise and investment. It is perfectly clear that this would put it in the power of a great corporation to entirely destroy its smaller competitors.

(5) It would constitute a powerful weapon in the hands of a competitor for blackmail and hard-driven bargains.

(6) It would prevent improvements because it would be disadvantageous to invent alternatives that were not manufactured and under which powerful competitors would secure licenses.

(7) It would *discourage*, rather than promote, the progress of science and the useful arts, and would operate to suppress many more valuable inventions than it would liberate by the license. The owner of a controlling patent would discourage improvements of an alternative nature that he could not immediately manufacture, as thereby his controlling patent would be destroyed.

(8) It would discourage the investment of money to develop inventions; would inject an element of uncertainty and instability in trade, and would hinder progress and check investigation and industrial development.

(9) It would inevitably induce inventors to keep their inventions rather than to give the knowledge to the public which is the consideration for the grant of the monopoly for a limited time under the Constitution.

W. F. BISSING.

Member of Committee, New York Patent Law Association.
2 Rector Street, New York.
April 14, 1922.

## Storing of Steel Bars

*To the Editor:* We notice a description on page 789 of your issue of March 23 of a method of storing steel bars and of denoting brands by the use of colors. We have had this same steel rack system in effect in the Cisco Machine Tool Co. for the last seven or eight years. We were the first to start a system of this kind. We carry out the same system at the Cincinnati Iron & Steel Co. in racking cold rolled shafting, boiler tubes, and such light material. H. C. BUSCH.

President Cincinnati Iron & Steel Co.
Cincinnati.

## British Pig Iron and Steel Output for March

LONDON, ENGLAND, April 17 (*By Cable*).

The production of pig iron in Great Britain in March was 389,000 gross tons and that of steel ingots and castings 549,400 tons. These compare with an output of 300,100 tons of pig iron and 415,000 tons of steel ingots and castings in February and with 288,000 tons of pig iron and of 327,500 tons of steel in January. The March pig iron output is the largest since February, 1921, when it was 463,600 tons. The steel output exceeds any month in 1921 and compares with a monthly average of 403,350 tons for the six months preceding February and following the coal strike.

The Hendee Mfg. Co., Springfield, Mass., motorcycles, has just added 600 employees to its payroll, bringing the total number of workers up to 1200, contrasted with 600 three months back. Its plant is operating on a basis of 48 hr. per week. Production averages 75 to 100 motorcycles per day, and a substantial backlog of orders is reported. The export business is improving, large orders having recently been taken in Holland and Portugal.

Owing to improved demands for electrical power from industries in the Mahoning and Shenango Valleys, the Pennsylvania-Ohio Electric Co. is completing installation at its Lowellville, Ohio, power station of a new turbo-generating unit of 20,000 hp., which is to be put into operation within a few weeks. It is the fourth addition to the property in nine years and represents, with requisite auxiliaries and housing, an investment of over $1,000,000.

# WIRE COMPANY CHANGE

## Thomas H. Taylor Retires from American Steel & Wire Co.

THOMAS H. TAYLOR, New York, one of the best known and best regarded men in the wire trade, retired on April 17 from the American Steel & Wire Co. of which he has been for 23 years assistant general sales agent in charge of the Eastern district. Mr. Taylor will devote most of his time to his personal business, particularly to that of the Tidewater Feldspar Co., of which he is vice-president and treasurer. The company's offices are at Middletown, Conn., and its mill is located nine miles from Middletown. Its market for feldspar is chiefly among manufacturers of porcelain ware and other porcelain products.

Mr. Taylor's connection with the wire business of the country dates from 1891, when he went from Omaha, Neb., to Chicago as secretary of the Columbia Patent Co., this company having acquired the Washburn & Moen patents on barbed wire. At Omaha Mr. Taylor had started a retail hardware store in 1883 and this developed into a wholesale business. A fire in 1891 entirely destroyed the building and contents.

THOMAS H. TAYLOR

RICHARD L. FOSTER

Reference to the Washburn & Moen patents on barbed wire recalls an interesting chapter in the history of that industry. Various manufacturers had been sued for infringement by the Washburn & Moen Mfg. Co., and John W. Gates and others conceived the plan to bring the various manufacturers together in a pool for the purchase of the Washburn & Moen patents. The Columbia Patent Co. was the result, and this company issued licenses to manufacturers and became the barbed wire selling company for the various manufacturers. It was the selling agent of various wire and wire nail manufacturers also, nine of the important companies having membership in the pool though an even larger number of smaller makers were outside. The Washburn & Moen patents were sustained by the Supreme Court in 1895.

In 1892 Mr. Taylor resigned as secretary of the Columbia Patent Co. and became a sales manager in the Chicago office of the Washburn & Moen Mfg. Co. In 1898 the American Steel & Wire Co. of Illinois was formed and Mr. Taylor accepted the position of manager of wire sales to manufacturing users, having his headquarters at Cleveland. The greater wire consolidation, known as the American Steel & Wire Co. of New Jersey, was organized in 1899 and Mr. Taylor was made the assistant general sales agent in charge of the Eastern district. C. T. Boynton, who had come up in the Washburn & Moen organization, was general sales agent at that time. A year later he was succeeded by Frank Baackes. Mr. Taylor organized the New York office, which had charge of the business in the States east of Ohio, Kentucky, Tennessee and Alabama. In this territory about 40 per cent of the wire and nail business of the American Steel & Wire Co. originates.

Mr. Taylor's business life has been one of uninterrupted connection with the hardware trade. He started as a clerk in a hardware store at Creston, Iowa, in 1875, and later was employed in the hardware trade at Plattsmouth and Omaha, Neb. The developments in wire since he became connected with the business in an important way in 1891 have been noteworthy. In no branch of the steel trade has any company developed so many and widely diversified uses for its product. To-day the American Steel & Wire Co. lists upwards of 5000 distinct products and manufacturing uses of wire. In 1891 the output of cut nails very considerably exceeded that of wire nails, the production of the former being 5,002,000 kegs and of the latter, 4,114,000 kegs. In 1920 the ratio of wire nails and cut nails was about 20 to 1—16,449,000 kegs against 844,000 kegs. Roundly, in the 31 years the country's capacity for the manufacture of wire products has trebled.

Mr. Taylor's successor as assistant general sales agent in charge of the Eastern district is Richard L. Foster, who for the past year has been in the Eastern office of the American Steel & Wire Co. as manager of the merchant sales department, having to do with sales to jobbers. Mr. Foster's connection with the wire industry dates from 1901, when he was mill clerk for the J. C. Pearson Co. at the Salem, Ohio, plant of the American Steel & Wire Co. The J. C. Pearson Co. has long been known in connection with the cement coated nail trade and at several plants, including that at Salem, the company took the nails in a semi-finished state and put them through the later processes. In 1902 Mr. Foster removed to Cleveland where he became traffic manager for the Pearson company and in the latter part of that year he went to Boston as the company's Eastern sales manager. When the J. C. Pearson Co., Inc., was formed in 1913, on the acquisition of the business by the American Steel & Wire Co., Mr. Foster was made vice-president, and in 1915 he became president. In 1921 the J. C. Pearson Co. ceased to function, the business being completely taken over by the American Steel & Wire Co. Mr. Foster's successor as manager of merchant sales in the Eastern office is E. H. Niven, who represented the American Steel & Wire Co. at Buffalo.

## Overheating in Factories

The commonest evil in air-conditioning in factories, says the U. S. Public Health Service, in a recent report, is the slight but highly objectionable overheating which obtains in ordinary window-ventilated workrooms where there is no marked overcrowding and no special process tending to overheat or vitiate the air. This evil can commonly be controlled by watching the thermometer, by common sense regulation of the artificial heat supply and the use of windows before and during the shift.

Heat hazards of high degree can not be summed up so simply. In cool weather, says the report, they can be adequately controlled by properly designed and operated systems of fan ventilation; but in summer time, although they can be mitigated by ventilating systems that produce vigorous air movement, they cannot be fully controlled except at prohibitive expense and must therefore, in general, be accepted as an unavoidable incident, of the employment. The effects, however, may be minimized by short spells or work alternating with rest periods.

The blast furnace of the Ford Motor Co. at River Rouge, Mich., near Detroit, produced 18,807 gross tons of basic iron in March, averaging 606.6 tons per day. This is the largest month's output for this furnace. The consumption of coke was 1797 lb. per ton of pig iron.

# LARGE ORE RESERVES

## Important Increase in Replogle Steel Co. Holdings by Empire Acquisition

The Replogle Steel Co., New York, which, as announced last week has purchased the Empire Steel & Iron Co., giving it a total of seven blast furnaces with a yearly capacity of 600,000 tons of pig iron, plans to put one of its new furnaces at Wharton, N. J., in blast within 30 days providing coke supply is not seriously curtailed by the coal strike. Pilling & Co., of which W. S. Pilling, a director of the Replogle Steel Co., is the head, have been selling agents of the Replogle Steel Co. and will continue in that capacity.

Pilling & Co.'s main office is in the Real Estate Trust Building, Philadelphia. The firm also maintains sales offices for pig iron, coal and coke at 71 Broadway, New York, and in Worcester, Mass.

Further details of the organization of the Replogle Steel Co. will be completed at a meeting of directors in New York on Friday, April 21. In addition to J. Leonard Replogle as chairman of the board and Leonard Peckitt, formerly president of the Empire Steel & Iron Co., as president, the list of officers includes L. P. Ross as vice-president in charge of operations. Mr. Ross has had large experience in blast furnace work being in charge for a number of years of the Standish and Port Henry, N. Y., furnaces of the Northern Iron Co. For the past two or three years he has been in charge of the plant at Wharton and superintended the construction of the two modern furnaces there, which were fully described in THE IRON AGE of Oct. 7, 1920.

One consideration in the acquisition of the Empire Steel & Iron Co. by the Replogle Steel Co. was the important ore holdings of the former, which when combined with those the Replogle Steel Co. already possessed, will give ample ore for full operation over an indefinite period without dependence on the ores of the Lake Superior or other districts.

Closely adjacent to the Oxford furnace of the Empire Steel & Iron Co. at Oxford, N. J., are the Oxford iron ore properties, consisting of 2300 acres in fee and mineral rights in 5700 acres additional, in which there are three veins of high grade ore. One of these, the Washington, is fully developed and equipped for the production of 15,000 tons monthly of finished concentrates. The second Oxford mine, known as the McKinley vein, has been opened but never worked, while the third vein has not been developed.

The Replogle mine, formerly known as the Scrub Oaks, is 1.3 miles from the Wharton furnaces. In reporting on these mines in 1919 the late James Gayley expressed the opinion that the Wharton properties "contain 100,000,000 tons of ore as of to-day" and indicated that later work was likely to increase this figure, with a possible enrichment of the ore as depth increased. In 1918 an extensive concentrating plant was built which was added to in 1920. The development of the second shaft at the Replogle mine is now at the second level, 500 ft. down. When the two shafts are connected, 2000 tons of ore or 1000 to 1500 tons of concentrates daily can be produced. The old Hibernia mine, which formerly supplied the Andover and Glendon furnaces, and from which 6,000,000 tons of ore has been taken, has not been operated in a considerable period and is water filled, but can be worked again should it be deemed advisable.

The Mount Hope mine of the Empire Steel & Iron Co. at Mount Hope, Morris County, N. J., comprises 1600 acres in fee simple and 200 acres of mineral rights upon which are five developed veins of high-grade magnetic ore. This mine is now being operated, having mining and milling facilities for the production of 18,000 to 20,000 tons per month of finish ore. This mine is connected with the Wharton furnaces by the Mount Hope Mineral Railroad, which also serves the Richard mine of the Thomas Iron Co. the Hoff mine and the intervening territory.

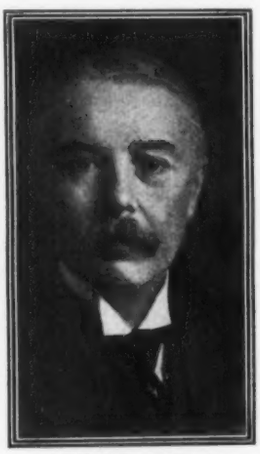
The Replogle Steel Co. has 29 iron mines, not all of which are developed, but its available ore is sufficient for an indefinite period and its low ore cost is calculated by its officers to enable it to make pig iron more economically than any merchant furnace interest in the East.

### The Chairman and the President

J. Leonard Replogle and Leonard Peckitt, who were elected chairman of the board and president, respectively, of the Replogle Steel Co., following the taking over of the properties of the Empire Steel & Iron Co., have long been prominent in the iron trade. Mr. Replogle, who, in a few days, will be 46 years of age, is best known on account of his long connection with the Cambria Iron Co., whose employ he entered as a 13-year-old boy in 1889, when his parents lost their home and all their possessions in the Johnstown flood, and with the Cambria Steel Co., in whose service he worked his way up from one of minor importance to that of vice-president and general manager of sales. In 1915 Mr. Replogle resigned from the Cambria Steel Co. to become vice-president and general manager of sales of the American Vanadium Co., whose office is in New York. In October of the same year, he organized a syndicate and bought the entire holdings of the Pennsylvania Railroad in the Cambria Steel Co., when a merger of important steel companies was proposed. These holdings constituted the controlling interest. When the merger was abandoned, Mr. Replogle and associates sold control of the Cambria Steel Co. to the Midvale Steel & Ordnance Co. early in 1916. After the United States entered the World War, Mr. Replogle was appointed Director of Steel Supply for the War Industries Board, a position which he filled with distinguished ability until after the armistice was declared. He then returned to New York and in 1919 organized the Replogle Steel Co., which took over the Wharton furnaces, building two modern stacks in 1919-20.

J. LEONARD REPLOGLE

Mr. Peckitt was born and educated in England, came to America as a young man and on arrival was employed at once by the Reading Iron Co., Reading, Pa., as chief chemist, remaining with it eight years. He became head chemist with the Crane Iron Co., Catasauqua, Pa., in 1890, serving in that capacity for one year and was then promoted to assistant superintendent, and advanced gradually until he became president of the company. In 1899, with the late Archer Brown, he took an active part in the formation of the Empire Steel & Iron Co., which acquired the Crane plant and other properties in eastern Pennsylvania. He was elected president of the Davies & Thomas Co. of Catasauqua, which for a number of years has specialized in the making of cast iron segments for the under-river tubes in and around New York and now has a contract for about 46,000 tons of the segments required for the building of the new vehicular tube. He is a member of the Iron and Steel Institute (Great Britain) and the American Iron and Steel Institute, the Institute of Mining Engineers, and the Engineers' Club, New York.



LEONARD PECKITT

# Important Strike Developments Expected

## End of Holiday Season Will Probably Be Marked by Return of Men to Work—Considerable Number of Non-Union Mines Idle

PITTSBURGH, April 17.—Strike conditions in the non-union coal field have not changed much, but there is an impression here that the coming week will develop some sort of an effort on the part of the steel companies owning mines in the Connellsville district to get them started. No very definite attempt was made last week to get the men back because it was realized that the very general observance of the Eastertide holidays would defeat the effort. Now that Easter is past it is believed that the men who want to work will be anxious to get back to their duties and it is now expected there will be some resumptions at idle mines late this week or the fore part of next week. A factor which is counted upon to assist the mine operators is the fact that no strike benefits are being paid and the large salaries paid to the union officials are being forcefully brought to the attention of the miners by placards printed in the various tongues.

The suspension of non-union coal mines has far exceeded expectations and it probably will be a month or more before the condition prevailing prior to April 1 can be restored and some go so far as to say that the trouble will not be fully corrected so long as the union mines remain idle. Existing stocks of coal seem to be ample with most of the steel companies but few of them are any too well off with respect to coke supplies. The Youngstown Sheet & Tube Co., Youngstown, and the Jones & Laughlin Steel Co., Pittsburgh, appear to be well supplied with coal for coking purposes and will be able to withstand the loss in coke production for a longer period than most of the other companies. Unless there is a change in the situation in the next two weeks, and coke becomes more plentiful, blast furnace suspensions are probable both here and in the nearby districts.

A shortage of semi-finished steel already exists, as is evident from the fact that inquiries are coming out from companies which ordinarily produce their own requirements. Youngstown steel makers are very short of Bessemer steel at present and some of them are trying to secure tonnages of this grade, offering open-hearth steel in exchange. Wheeling district steel makers who were getting sheet bars from the Mingo, Ohio, works of Carnegie Steel Co. are seeking tonnages elsewhere now that this plant has suspended. It is extremely difficult to enter orders for any kind of semi-finished steel to-day, because producers are well committed and are not anxious for additional tonnages at present prices, with fuel supplies so uncertain and pig iron and scrap commanding much higher prices than recently prevailed.

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### Demand Not Equal to Production

WASHINGTON, April 18.—A number of important non-union mines in the Connellsville coke region and in Central Pennsylvania, have been closed by the coal strike, says the *Geological Survey*, in its report for the week ended April 15th, but the existing demand is not sufficient to call out full production in those districts remaining at work. From mines in many non-union fields reports of "no market," "dull demand" and "unbilled coal" continue to be received. The number of loaded cars unconsigned at the mines was very large when the strike began, but the latest reports from the railroads show that it is increasing. Complete return of the coal loaded into cars at the mines indicate that production during the first week of the strike was 3,784,000 net tons of bituminous coal and a few cars of anthracite, dredged from the rivers. The total production of all coal was 3,793,000 net tons. In the first week of the strike of 1919, only 3,582,000 tons of bituminous coal was produced, but at that time the anthracite mines were working to capacity and produced 2,008,000 tons. The total production of all coal in the first week of the 1919 strike was, therefore, 5,590,000 tons.

"While the mine reports do not measure the effectiveness of the strike order, they are interesting because they show the condition of car supply and of demand at the moment the strike began," says the *Survey*. "In all of the non-union districts, and many union fields as well, the dominant factor limiting output was lack of demand. With local exceptions, the railroads were able to handle without difficulty all of the business offered. Over the country as a whole, the average loss ascribed to transportation was only 2.5 per cent."

Production of beehive coke fell off 21,000 tons during the first week of the strike, chiefly because of the walkout of a considerable number of men in the Connellsville region. From the records of cars of coke loaded by the 20 principal coke-carrying roads, it is concluded that the total output for the week ended April 8 was 170,000 tons, a decrease of 11 per cent, when compared with the last week of March.

An increase of 7 per cent in the daily rate of production of by-product coke in March suggests a distinct improvement in the tone of business. The output for the month, 2,137,000 tons, was the largest by far in any month since January, 1921, and actually exceeded the monthly average of the year 1919. The daily rate of production was 69,000 tons, an increase of 7.2 per cent over the February rate. Fifty-nine of the 71 plants were in operation, and 12 were idle. The ratio of production to capacity was 58.3 per cent.

These statistics are based upon reports from 69 of the 71 plants now in existence, and include estimates for the two plants not heard from.

The month's production of beehive coke also showed an increase, and the total output of all coke—2,869,000 tons—exceeded the 1921 average by 35 per cent.

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### Spread of Strike Stopped

UNIONTOWN, PA., April 15.—Spread of the sympathetic strike among the unorganized miners in the Connellsville bituminous district stopped suddenly this week when it ran up against the Leisenrings and Trotter plants, H. C. Frick Coke Co. stronghold in the old Klondike region. Additional union organizers were brought into the region this week and the union efforts were centered against the Leisenrings, but to no avail. In stories out of Pittsburgh early in the week, it was stated that the union admitted that failure to line up the Leisenrings would mean failure of the effort to organize the region. There are indications to-day that the walkout which has completely tied up the southern Connellsville region, known also as the new Klondike region, and a dozen or more mines in the northern Connellsville region, will not be maintained and that a break in the ranks and a return to work may be looked for within the next ten days.

The last paydays for the men who have quit work marked this week. In some instances the pays were comparatively large. But in all instances after store checks and rents had been deducted, the men had only small amounts left. At Continental Mine, near here, it was reported that on an average the men received about $2, net, after all deductions, the deductions bringing the accounts up to date and eliminating the extra two weeks' credit. There was some talk at the plant

that the men would return to work. The credit at company stores automatically ceases when men refuse to work and the action in "cutting off credit" has aroused no animus at any of the plants, according to best information received here.

## Colorado Fuel & Iron Co. Employees Loyal

DENVER, April 15.—In the State of Colorado as a whole the present production of coal is at least 50 per cent of that in March. This includes mines of companies operating on union contracts as well as those having open shop conditions.

The situation at properties of the Colorado Fuel & Iron Co. is about as follows:

Its plan of joint representation of employees and management provides that "There shall be no discrimination by the management or by any of the employees on account of membership or non-membership in any society, fraternity, or union." As a matter of fact, a considerable portion of the miners are, at least intermittently, members of the United Mine Workers of America. In the past, except in 1919, coal miners in Colorado, both union and non-union, have quite generally responded to strike calls issued by the international organization.

During the present strike, all of our properties have operated continuously with the exception of two mines in one district where, for more than 30 years, the men have generally been active members of the union. Even at these two mines, secret votes taken before April 1 showed a majority in favor of remaining at work, and since then there have been some indications of a desire on the part of the miners to resume operations.

In the company's two larger fields, the Trinidad and Walsenburg districts, its coal output since April 1 has been normal. In fact, it has exceeded the demands of our markets. The few men who refrained from work the first day or two of April have practically all returned and some of the mines are operating with larger average forces than before the strike.

## Little Change in Connellsville Mines

UNIONTOWN, PA., April 18.—The first two days of this week have seen little change in the situation in the Connellsville bituminous region. Although it was reported that a number of men had quit work to-day at Leisenring No. 1, the Leisenrings are still operating, and are the center of a bitterly concentrated attack by union organizers.

The number of men idle in the region at operating plants was increased yesterday and to-day by the Easter holiday celebration. The Leisenrings are working to-day about 60 per cent of the production last week. To-morrow is expected to be the critical day in the region. If the Leisenrings continue operation, prospects are favorable for a return of many to work. If the Leisenrings quit there are few observers who will venture predictions.

The union mass meeting at Connellsville on Sunday was attended by about 600 persons, some 100 or more having been reported as affiliating with the union.

The Washington Run Coal & Coke Co. suspended its operations at Star Junction this week when a large number of employees quit. The company announced that operations would not be resumed until the strike situation had been cleared.

# SENATORS OBJECT

### Opposition to Placing Manganese on Free List and Reducing Rates on Magnesite

WASHINGTON, April 18.—Western Senators have already begun to fight against the action of the Committee on Finance, in placing manganese ore on the free list and in reducing the rates on magnesite. Senator Nicholson of California has introduced an amendment proposing to restore the House rates on manganese ore, while Senator Poindexter of Washington has served notice that he will ask for restoration of the House rates on magnesite. Placing of the House duty on manganese ore, it is pointed out, would probably mean higher and perhaps the same or practically the same duties on ferromanganese as were provided in the Fordney bill. It is also likely that there will be a fight on the Senate floor in an attempt to restore the higher House duties on ores and ferroalloys used in the manufacture of tool steel and on tool steel rates themselves, although it is understood that the trade is willing to accept the rates determined upon. Undoubtedly there will be opposition from the Democratic side and other sources, against these rates and it is stated that Sheffield, Eng., tool steel makers are preparing again to protest against the rates on this grade of steel, claiming that it would shut out altogether exports to the United States. It is no secret, however, that many who are following this phase of the schedule are firmly of the conviction that the British manufacturers, instead of winning favor for their side of the case, are unconsciously supporting the argument of the American producer. It is pointed out that it is unusual for foreign interests to make any recommendations in connection with an American tariff and that politically it would be unwise for an American Congress to adopt the recommendations made, whatever their merit or lack of merit may be.

#### Some Improvement

The metal schedule has been improved somewhat by the Senate Committee by reason of the removing of irregular classifications that appeared in a few instances in the House bill. On the whole, the Senate bill is changed but little, as it relates to rolled steel products. Analysis shows that the committee gave practically no recognition as to these items to contentions of prominent iron and steel manufacturers who made recommendations as to proposed classifications and changes in duties, some of the latter providing for reductions.

The committee virtually has boasted of the fact that the bill is a farmer's bill. In brief, it has reduced or removed duties on products consumed by the farmer, while at the same time increasing duties on the products he sells. When this fact is kept in mind, it is perhaps not surprising that the committee disregarded the suggestion of President James A. Campbell of the Youngstown Sheet & Tube Co., that barbed wire be given the same protection as other wire products. Instead, the committee left barbed wire on the free list, apparently thinking this would be a sop to the farmer, unaware perhaps of the fact that the farmer also uses other wire products. Mr. Campbell points out that the cost of wire that enters into the manufacture of barbed wire is fully as great as that of wire for fencing or other purposes. He stated that labor, in making barbed wire, is certainly entitled to the same protection as the laborer employed in making wire for other purposes "and it would be rank discrimination to treat it other than on the same basis." He added: "If the manufacturer of barbed wire is compelled to meet foreign competition without any protection, he will be forced to reduce labor that enters into the manufacture of this wire to the very minimum and may be put out of business entirely."

#### Duty on Cotton Ties

It was inadvertently stated by THE IRON AGE in its article last week on the tariff that the Senate Committee had placed cotton ties on the free list. This is an error. As correctly indicated in the table accompanying the article, cotton ties are left dutiable at ¾c. lb. as provided in the House bill.

The tariff bill is to be taken up in the Senate on Thursday of the present week. It has been the object of vigorous criticism by the Democrats, as was to be expected. It will require several days before the bill is taken up for consideration, inasmuch as it will have to be read before this is done.

## PROBLEM OF COAL INDUSTRY

### Government Studying Basic Difficulties to Effect a Lasting Cure

WASHINGTON, April 18.—Rather than give its attention to the coal strike as a matter of immediate concern, the Administration has engaged in the study of basic difficulties in the coal industry with a view to adopting a remedy that it is hoped will effect a definite cure, or at least greatly reduce labor trouble and insure more regular mining operations. It was made known at the White House last Friday that constructive suggestions reaching to the fundamentals of the situation have been made by several of the President's advisers. These proposals are to be announced later, it was authoritatively stated.

Recognition has been given to the fact that it is desirable to develop a permanent cure instead of attempting to devise a temporary makeshift plan looking to the ending of the strike. The Administration, it is known, does not propose to intervene in the strike unless it develops to a point where the public welfare is endangered and action by Federal authorities is found necessary. It was pointed out at the White House that the price of coal has not advanced and the situation is not yet considered serious. In some quarters doubt has been expressed that the coal strike can be settled in less than two months. Apparently this is based on the fact that the average supplies on hand are rated to last 60 days. This is one of the reasons that there is no alarm at this time over the strike, and coupled with this is the fact that there is no active market for coal.

The Administration, in making known its hands-off policy, has emphasized the fact that this does not mean it is not ready to encourage attempts initiated by operators or miners to get together and arrive at an agreement. The Administration, however, evidently does not intend to offer further suggestions, inasmuch as it feels that for practically the past 12 months it endeavored to bring about an agreement that would prevent the strike, but found its efforts to be in vain.

The suggestions that are being worked out to develop a permanent remedy for difficulties in the coal industry are in the meantime being awaited with interest. There are reports from sources that are considered reliable that a great deal of favor has been given to the idea of creating a board similar to the Railroad Labor Board which the Administration looks upon as proving a success. It is stated that the temper of both operators and miners now is inclined to accept the jurisdiction of such a body for the settlement of disputes. Previously objection to such a board has been expressed, particularly by the United Mine Workers.

Another proposal that is said to have been discussed concerns the authorization of a common selling agency in each district which, it is pointed out, would eliminate the inefficient mine and stabilize employment in the industry, thus removing one of the basic difficulties. Thought also has been given to the idea of establishing a sliding scale based on six-day continuous employment with a view to doing away with the intermittent mine. Such a plan, it is believed, would be acceptable only on the understanding that it did not involve Government aid. The idea of seasonal shipments, which are said to obtain in only four mining districts, and differential freight rates, has been discouraged.

## MARCH IN FABRICATED STEEL

### Bookings Nearly 80 Per Cent Better Than in February—Association Suspends

The records of the Bridge Builders and Structural Society, from reports collected by George E. Gifford, 50 Church Street, New York, its secretary, bear out the indications of marked improvement shown from week to week in THE IRON AGE. According to these records, 139,300 tons of fabricated structural steel was contracted for in March throughout the United States, equivalent to 77 per cent of the capacity of the bridge and structural shops of the country.

The average amount of business taken in March in all of the ten years preceding is 106,550 tons. Thus the March, 1922, volume of business is over 30 per cent better than the March average. March was so good a month indeed that the total for the first quarter of 1922 was 290,100 tons, which is somewhat better than the average for the first quarter of the preceding ten years, which is 283,350 tons.

On April 30 the Bridge Builders and Structural Society will disband. It is probable that there have been defections from the membership ever since the original charge against the hardwood open-price association was announced, so much doubt being cast over the legality of the so-called open-price basis of competition. At any rate at a meeting held at Pittsburgh, April 14, it was voted to discontinue at the end of the month.

### Co-operation of Government and Business Editors

Editors of business papers to the number of 45 spent Thursday, April 13, in Washington, conferring with department officials in the interest of business in general. This has been a periodic event over the last two years. The meetings last week included group gatherings with President Harding, General Dawes of budget fame, now specially concerned in solving, under a special mission, the problem of the disposal of Government surplus materials; Secretary of Commerce Hoover, and Assistant Secretary of Navy Theodore Roosevelt.

The meetings are conducted by what is known as the National Conference of Business Paper Editors. They are held to exchange views and information with different branches of the executive department of the Government. The program commonly includes the formulation for discussion of a list of questions on domestic and foreign business conditions. The conferences provide a close contact by the Government with business and conversely acquaint business through the business press with the attitude of the Government toward business problems and with the efforts to foster foreign and domestic business.

### Many Interested in Ore Rate Hearing

WASHINGTON, April 18.—The importance placed by the iron and steel industry on the consolidated iron ore rate hearing, to begin next Monday before Commissioner Jewel of the Interstate Commerce Commission, is indicated by the number of interests which will participate. The commission has entered orders permitting intervention in connection with the complaint of the Buffalo iron and steel producers concerning the relationship between rates on fuel and ore to Buffalo, to Eastern Pennsylvania and Mahoning and Shenango Valley iron and steel producers. Other important producing centers also will be represented in connection with the order suspending reduced rates on ex-lake and Eastern ore rates.

The New York office of the Chicago Bridge & Iron Works has just closed a contract with the Northern New York Utilities for a half mile of high pressure penstock. Approximately 1300 tons of plate are involved. The contract includes fabrication and erection. This work is in connection with the Brown's Falls Development of the Northern New York Utilities Co.

The Wilton Tool Co., which has decided to move its business from Detroit, will start construction May 1 on a site at Sharon, Pa. Specifications call for two machine shops, 50x200 ft., and an additional building 25x100 ft. A three-story office building, 30x40 ft., is also to be erected. Machinery will be moved from the company's Detroit plant.

# Iron and Steel Markets

## MORE PRICE ADVANCES

### Coal Strike Stimulates Buying of Pig Iron and Rolled Steel

### Market Turns in Sellers' Favor and Prompt Delivery Is More Difficult

The coal strike's effect upon the iron and steel market in the past week has been seen chiefly in advancing pig iron prices and in increased demand and stiffening prices for rolled products. Actual production of coal has changed little outside of the Connellsville district, where it is somewhat less, and the rate of steel works and rolling mill operations is about 75 per cent for the Steel Corporation and close to 70 per cent for independent companies.

In the Connellsville field many of the idle non-union men are still out without making demands. The present week is expected to show their real intentions and another week may see the beginning of a drive to reopen non-union mines.

Buying of steel has been stimulated by the increasing inability of mills to make prompt deliveries and consumers have found that they must lay in stocks instead of drawing on the mills week by week as they have done for months.

Some of the steel making centers outside of Pittsburgh have drawn upon the West Virginia and Kentucky fields for coal, and thus Buffalo, Youngstown and other Central Western by-product coke plants have kept going. The Carnegie Steel Co., which was running at 72 per cent of ingot capacity prior to the strike, is now operating about 70 per cent.

The situation in steel has changed so rapidly in favor of sellers that in view of strike possibilities and the large volume of their sales in March some of them are more cautious about booking ahead. However, published statements that this or that company has withdrawn from the market have gone too far.

In brief, the price changes of the week are $1 to $2 per ton on pig iron in most districts and as high as $3 in Eastern Pennsylvania on limited sales, while several finished steel products are up $2 per ton. Conservative sellers are making an effort to check the tendency to overbuy, now fairly pronounced on the part of some consumers. There is the feeling that advances based on fear of a coal strike scarcity might be followed by a hurtful reaction.

Two large independent makers of plates, shapes and bars are now quoting 1.60c, Pittsburgh, and hoops and bands, recently established at 1.90c, have advanced to 2c. The April 1 prices on semi-finished steel have been exceeded as much as $2 per ton.

In pig iron Chicago witnessed the heaviest buying of foundry grades in two years. At Cleveland a Lake furnace interest, after selling 15,000 to 20,000 tons of malleable iron for the second quarter, retired from the market, as have many other furnaces. A railroad equipment company at Chicago has placed an order for 12,000 tons. Sales of basic iron include 10,000 tons to a subsidiary of the Steel Corporation in Philadelphia, 10,000 tons at Cleveland and 10,000 by a Valley producer. On Southern iron $16, Birmingham, is now the minimum and sales are extending into numerous Northern markets where Southern iron has been almost unknown for a long time. The price of charcoal iron has not yet been advanced.

The volume of fabricated steel business closed in March, 139,300 tons, was almost as much as that of January and February combined and was over 30 per cent better than the March average for the preceding ten years. For the first quarter contracting has engaged about 54 per cent of bridge and structural shop capacity, or only two or three per cent below the average for the last decade.

Lettings for the past week in fabricated steel exceed 60,000 tons, or half again what is weekly capacity, about 41,000 tons. The figures do not include Seattle's 12,200-ton pipe line, now finally awarded. Fresh structural work requiring 17,000 tons has appeared.

Pending railroad car business indicates early buying of fully 16,000 cars. Locomotives placed with two builders in the past week number 174 and 25 are under negotiation.

Coke prices have advanced sharply. Limited tonnages of both foundry and furnace grades have sold at $5 and even higher, but few furnaces are willing to pay as high as $5.

The week's pig iron advances have pushed THE IRON AGE composite pig iron price from $19.14 to $20.40, the highest figure since last July, and the greatest advance in any one week since August, 1920. The finished steel composite is unchanged at 2.084c. per lb.

Shipments of sheets from mills on contracts have been heavy and numerous sales have been made at the recent $3 advance.

Bolts and nuts have been rather generally advanced 10 per cent except hot pressed and cold punched nuts.

## Pittsburgh

PITTSBURGH, April 18.

Iron and steel prices still are advancing in this market, largely as a result of the prospect of curtailment of production and consequent delays in shipments, due to the labor situation in the non-union coal districts. Buyers, already liberally covered but fearing further advances in prices, appear anxious to safeguard sufficient supplies and with a number of important producers sold up against probable production for the next 60 days and practically out of the market, those still taking business are naming prices calculated to show a fair margin of profit. The week has seen a clear advance of $1 per ton in all grades of pig iron, while several finished steel products have advanced $2 per ton. At least two large makers of plates, shapes and bars now are quoting 1.60c. Pittsburgh, and hoops and bands recently established at 1.90c. base, Pittsburgh, have gone in the past week to 2c. Prices on semi-finished steel set up on April 1 have been exceeded on sales by as much as $2 per ton, while quotations of $4 per ton over the April 1 prices of billets and sheet bars recently have been made.

In conservative circles, efforts are being made to check the tendency, now fairly pronounced on the part of

# A Comparison of Prices

**Advances Over the Previous Week in Heavy Type, Declines in Italics**

**At date, one week, one month, and one year previous**

**For Early Delivery**

| **Pig Iron,** Per Gross Ton: | Apr. 18, 1922 | Apr. 11, 1922 | Mar. 21, 1922 | Apr. 19, 1921 |
|---|---|---|---|---|
| No. 2X, Philadelphia‡ | **$25.40** | $22.34 | $21.26 | $26.26 |
| No. 2, Valley furnace† | **21.00** | 20.00 | 19.00 | 24.50 |
| No. 2, Southern, Cin'ti† | **20.50** | 20.00 | 19.50 | 27.50 |
| No. 2, Birmingham, Ala.† | **16.00** | 15.50 | 15.00 | 23.00 |
| No. 2 foundry, Chicago* | **21.00** | 20.00 | 20.00 | 24.00 |
| Basic, del'd, eastern Pa | **21.50** | 21.00 | 20.50 | 25.00 |
| Basic, Valley furnace | **20.00** | 19.00 | 18.00 | 23.00 |
| Valley Bess., del. Pitts | **22.96** | 21.96 | 21.46 | 26.96 |
| Malleable, Chicago* | **21.00** | 20.00 | 20.00 | 24.00 |
| Malleable, Valley | **20.50** | 19.50 | 19.00 | 25.00 |
| Gray forge, Pittsburgh | **22.71** | 21.71 | 20.71 | 25.46 |
| L. S. charcoal, Chicago | 26.00 | 26.00 | 26.00 | 38.50 |
| Ferromanganese, seaboard | **65.00** | 62.50 | 62.50 | 90.00 |

| **Rails, Billets, etc.,** Per Gross Ton: | | | | |
|---|---|---|---|---|
| O.-h. rails, heavy, at mill | $40.00 | $40.00 | $40.00 | $47.00 |
| Bess. billets, Pittsburgh | 29.50 | 29.50 | 28.00 | 37.00 |
| O.-h. billets, Pittsburgh | 29.50 | 29.50 | 28.00 | 37.00 |
| O.-h. sheet bars, P'gh | 31.00 | 31.00 | 29.00 | 39.00 |
| Forging billets, base, P'gh | 34.50 | 34.50 | 32.00 | 42.00 |
| O.-h. billets, Phila | 35.24 | 35.24 | 33.74 | 42.74 |
| Wire rods, Pittsburgh | 38.00 | 38.00 | 36.00 | 48.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, gr. steel, P'gh, lb. | 1.50 | 1.50 | 1.40 | 2.20 |
| Light rails at mill | 1.50 | 1.50 | 1.40 | 2.45 |

| **Finished Iron and Steel,** | | | | |
|---|---|---|---|---|
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Iron bars, Philadelphia | **1.86** | 1.81 | 1.76 | 2.35 |
| Iron bars, Chicago | **1.65** | 1.60 | 1.60 | 2.38 |
| Steel bars, Pittsburgh | 1.50 | 1.50 | 1.40 | 2.10 |
| Steel bars, Chicago | 1.60 | 1.60 | 1.60 | 2.48 |
| Steel bars, New York | 1.88 | 1.88 | 1.78 | 2.48 |
| Tank plates, Pittsburgh | 1.50 | 1.50 | 1.40 | 2.20 |
| Tank plates, Chicago | 1.60 | 1.60 | 1.60 | 2.58 |
| Tank plates, New York | **1.88** | 1.78 | 1.78 | 2.58 |
| Beams, Pittsburgh | 1.50 | 1.50 | 1.40 | 2.20 |
| Beams, Chicago | 1.60 | 1.60 | 1.60 | 2.58 |
| Beams, New York | 1.88 | 1.88 | 1.78 | 2.58 |
| Steel hoops, Pittsburgh | **2.00** | 1.90 | 1.80 | 2.75 |

| **Sheets, Nails and Wire,** | Apr. 18, 1922 | Apr. 11, 1922 | Mar. 21, 1922 | Apr. 19, 1921 |
|---|---|---|---|---|
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Sheets, black, No. 28, P'gh | 3.15 | 3.15 | 3.00 | 4.00 |
| Sheets, galv., No. 28, P'gh | 4.15 | 4.15 | 4.00 | 5.00 |
| Sheets, blue an'l'd, 9 & 10 | 2.40 | 2.40 | 2.25 | 3.10 |
| Wire nails, Pittsburgh | 2.40 | 2.40 | 2.40 | 3.25 |
| Plain wire, Pittsburgh | 2.25 | 2.25 | 2.25 | 3.00 |
| Barbed wire, galv., P'gh | 3.05 | 3.05 | 3.05 | 4.00 |
| Tin plate, 100-lb. box, Pgh | $4.75 | $4.75 | $4.60 | $6.25 |

| **Old Material,** Per Gross Ton: | | | | |
|---|---|---|---|---|
| Carwheels, Chicago | **$19.00** | $18.25 | $17.00 | $14.00 |
| Carwheels, Philadelphia | **16.00** | 15.75 | 16.00 | 18.00 |
| Heavy steel scrap, P'gh | **16.50** | 16.00 | 15.00 | 12.50 |
| Heavy steel scrap, Phila | 14.00 | 14.00 | 13.50 | 11.00 |
| Heavy steel scrap, Ch'go | **13.75** | 13.25 | 12.50 | 11.00 |
| No. 1 cast, Pittsburgh | **17.00** | 16.50 | 15.75 | 18.00 |
| No. 1 cast, Philadelphia | **17.50** | 17.00 | 17.25 | 18.00 |
| No. 1 cast, Ch'go (net ton) | **15.00** | 14.75 | 14.25 | 13.50 |
| No. 1 RR. wrot, Phila | 16.00 | 16.00 | 15.50 | 17.00 |
| No. 1 RR. wrot, Ch'go (net) | **12.00** | 11.75 | 11.75 | 10.00 |

| **Coke, Connellsville,** Per Net Ton at Oven: | | | | |
|---|---|---|---|---|
| Furnace coke, prompt | **$5.00** | $4.00 | $3.25 | $3.50 |
| Foundry coke, prompt | **5.00** | 4.75 | 4.25 | 4.50 |

| **Metals,** | | | | |
|---|---|---|---|---|
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Lake copper, New York | 12.87½ | 12.87½ | 13.00 | 12.75 |
| Electrolytic copper, refinery | 12.62½ | 12.62½ | 12.75 | 12.50 |
| Zinc, St. Louis | *4.90* | 4.92½ | 4.72½ | 4.65 |
| Zinc, New York | *5.25* | 5.27½ | 5.07½ | 5.15 |
| Lead, St. Louis | **4.95** | 4.80 | 4.42½ | 4.25 |
| Lead, New York | **5.15** | 5.00 | 4.70 | 4.25 |
| Tin (Straits), New York | **31.00** | 30.50 | 29.12½ | 31.00 |
| Antimony (Asiatic), N. Y. | **5.00** | 4.75 | 4.20 | 5.12½ |

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

**Composite Price, April 18, 1922, Finished Steel, 2.084c. Per Lb.**

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

| | |
|---|---|
| April 11, 1922. | 2.084c. |
| March 21, 1922. | 2.019c. |
| April 19, 1921. | 2.764c. |
| 10-year pre-war average. | 1.689c. |

**Composite Price, April 18, 1922, Pig Iron, $20.40 Per Gross Ton**

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

| | |
|---|---|
| April 11, 1922. | $19.14 |
| March 21, 1922. | 18.38 |
| April 19, 1921. | 23.71 |
| 10-year pre-war average. | 15.72 |

buyers, to over buy. It is held that an advance built up on frightened buying, based on the coal situation, could not be maintained, once this trouble has been adjusted, and that the reaction which probably would ensue might undo much of the constructive work recently accomplished in putting prices back to levels founded on costs. Already some pig iron producers note a material decline in the number of inquiries as compared with those on the market before present prices were reached.

The labor situation in the Connellsville district has grown steadily worse since a week ago, and it is doubtful if that large district to-day is getting out as much as 30 per cent of average capacity production. The situation with regard to coke supplies is rather worse than that in coal reserves, because stocks of coal were pretty large, as a general rule, and some of the steel making centers outside of the Pittsburgh district have been able to draw upon the southern West Virginia and Kentucky fields, these supplies enabling Buffalo, Youngstown and Middle Western by-product plants to keep going.

So far, steel works operation in this and nearby districts has not suffered very seriously and there has been a loss of only one additional blast furnace in the past week. This was the furnace of the American Manganese Mfg. Co., Dunbar, Pa. The Carnegie Steel Co., which was running about 72 per cent of its ingot capacity, prior to the outbreak of the strike, is running this week slightly under 70 per cent, which, however, compares with the rate of about 80 per cent which would have been reached if this company did not have to change its plans as a result of the defection of non-union miners. Finishing mills operations show practically no decline. It is expected that this week and next will see the inauguration of a drive to reopen idle non-union coal mines.

**Pig Iron.**—The supply situation is steadily growing tighter because of the moderate production of merchant furnaces, and the need of the steel companies for such stocks as they have on their yards. This condition is reflected in a further advance of $1 per ton in all grades, on sales, and of even more in the prices which producers now are asking. A Youngstown district steel maker recently bought 5000 tons of basic iron, paying $19, Valley furnace, for some off-grade iron, and $20 for standard basic. This iron is to be shipped from another Valley steel works. Standard basic now is not available at less than $20, and a Cleveland interest has named $23, Cleveland, on some recent inquiries. Justification for this quotation is

claimed on the ground that it represents actual costs. No sales yet have been made here at more than $20, Valley furnace, and inquiries are fewer than they were recently. Small sales of Bessemer iron have been made at $21, Valley furnace, that price now being minimum. It is reported that a Pittsburgh district steel maker recently bought 2000 tons of Bessemer iron, but the buyer credited with the purchase states that the amount is excessive and that the iron was not standard Bessemer. Foundry iron has moved up to $21 furnace on sales, and makers now are generally asking $22, and are not especially eager for additional tonnages, pending a clearing up in the fuel situation. Of the 140 steel works and merchant blast furnaces in this and nearby districts, 62 now are in blast, a decrease of eight since the first of the month.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

| | |
|---|---|
| Basic | $20.00 |
| Bessemer | 21.00 |
| Gray forge | $20.75 to 21.00 |
| No. 2 foundry | 21.00 |
| No. 3 foundry | 20.75 to 21.00 |
| Malleable | 20.50 |

**Ferroalloys.**—Prices of alloys made in blast furnaces are strengthened by the shortage of coke, due to the spread of the strike of the union coal miners to the non-union fields. The Carnegie Steel Co. has advanced its price of 80 per cent ferromanganese to $72.50, Atlantic seaboard. Other domestic makers are asking $70, Atlantic seaboard. The new price has no basis in sales and has been named primarily to ward off business. Several of the Valley steel makers are threatened with suspension because they did not lay in reserve stocks of coal for gas producers. This lessens the demand for ferroalloys from that quarter. The principal commercial producer of spiegeleisen is practically out of the market, pending a change in the fuel situation. Higher prices appear imminent. Jackson, Ohio, producers of Bessemer ferrosilicon and silveries advanced prices $1 per ton, effective April 12.

We quote 78 to 82 per cent ferromanganese, $65 to $72.50 c.i.f. Atlantic seaboard for domestic and $65 for English. Average 20 per cent spiegeleisen, $26.50 to $30 furnace; 16 to 19 per cent, $26.50 to $29 furnace; 50 per cent ferrosilicon, domestic, $55 to $60 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, $37.50; 11 per cent, $40.80; 12 per cent, $44.10; 13 per cent, $48.10; 14 per cent, $53.10; silvery iron, 6 per cent, $26; 7 per cent, $27; 8 per cent, $28.50; 9 per cent, $30.50; 10 per cent, $32.50; 11 per cent, $35; 12 per cent, $37.50. The present freight rate from Jackson to New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

**Iron and Steel Pipe.**—Prices of steel pipe are pretty well back to Dec. 16, 1921, card and because of the fuel situation makers are not taking orders from other than regular customers and not allowing the latter to specify for more than ordinary allotments. The average price of line pipe on the Dec. 16, 1921, card ranges between $60 and $65 per ton and the effort now is to obtain these prices, which contrasts with sales as low as $40 in early March. General demand is brisk and quite as much business is being turned down as is being entered. There is a fairly good demand for wrought iron pipe, but prices still are restricting sales. Discounts are given on page 1107.

**Wire Products.**—The American Steel & Wire Co. has not yet followed the advance of $2 per ton recently announced by the Pittsburgh Steel Co., and followed by most other independents, in nails, barbed wire, staples, and cement coated nails, but the indications are that it will soon do so. All makers are heavily committed and are indifferent about adding to their obligations, although they have plenty of opportunities to do so, because buyers really are anxious to be covered in the event that the coal strike affects production and shipments.

We quote wire nails at $2.40 to $2.50 base per keg, Pittsburgh, and bright basic and Bessemer wire at $2.25 base per 100 lb., Pittsburgh.

**Wire Rods.**—Makers are booked against probable production for the next 60 days and because of the fuel situation, most of them are indifferent about additional orders at this time. The market is very firm at $38 for the base size of soft rods, but new business calling for early delivery probably would command a higher figure. Prices are given on page 1107.

**Billets, Sheet Bars and Slabs.**—Makers are sold up against production for the next 60 days and probably for a longer period, since a number of companies did not expect the non-union districts to be affected by the coal strike and accordingly did not stock much coal for gas producers, with the result that a curtailment of steel works operations is a possibility. Decline in shipments on contracts has started some open market inquiries against which prices $2 to $4 per ton above what are regarded as regular quotations have been named. A Youngstown mill quoted $33.50 on 2000 tons of 4-in. billets and $35 for sheet bars. A Youngstown district steel maker recently bought 5000 tons of small billets and is understood to have paid $33 or $2 a ton above the market. None of the mills in this and nearby districts has any steel available for early shipment. Bessemer steel is short in the Youngstown district.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at $29.50 to $33.50; 2 x 2-in. billets, $31 to $35; Bessemer and open-hearth sheet bars, $31; slabs, $30 to $34.50; forging billets, ordinary carbons, $34.50 to $37.00, all f.o.b. Youngstown or Pittsburgh mills.

**Sheets.**—Demand in all finishes still is extremely active and no trouble is experienced in obtaining the advance set up April 1 by the independents and later followed by American Sheet & Tin Plate Co. Practically all of the large producers have orders sufficient to keep them busy during the remainder of the present quarter and are not especially anxious for new business, particularly if it calls for early delivery. A number of inquiries have come out lately for tonnages for shipment in the third quarter and the last half of this year, but such business generally is being turned down. The American Sheet & Tin Plate Co. again this week is operating 90 per cent of its sheet mills while the independent companies are averaging 85 per cent of capacity, the highest point reached in almost two years. Sheet bars are scarce and with some makers quoting them higher, there is a possibility of another advance in sheets. Prices are given on page 1107.

**Tin Plate.**—Non-integrated makers are beginning to feel the decrease in steel production incident to the coal strike, and are finding it a little difficult to keep up with their obligations. Practically all makers are sold ahead for the next 30 days and some of them have obligations that make impossible the entering of additional business for delivery prior to the latter part of June. The price situation is decidedly firm, especially as there are no stocks worthy of mention, but so far there has been no effort to advance the market beyond $4.75 per base box, Pittsburgh.

**Steel Skelp.**—Not much business is being done, but the market is moving upward in sympathy with plates and steel prices in general. The recognized minimum on pipe skelp now is 1.50c.

**Boiler Tubes.**—The market is gaining in strength and activity on commercial seamless tubes. There has been no change in quoted discounts, but until recently these bore only a remote relation to selling prices. Now they are the basis of sales and as an indication of the increase in business, big distributors state that deliveries now are not nearly as prompt as they were recently. Makers no longer are taking less than a full carload of 36,000 lb. at less than the carload discount. Recently as little as 10,000 lb. could be bought at the carload discount. The supplementary discount of 5 per cent still is in effect in lapweld steel tubes and the giving of additional concessions has not ceased. Charcoal iron tubes are fairly steady in price, but are too high to sell well. Discounts are given on page 1107.

**Steel Rails.**—A few inquiries for light rails are being made by coal mine operators who are not yet affected by the miners' strike, but the market is far from active. All makers rolling these sections from new billets are quoting 1.50c. base and refusing to consider less, not because of the demand, but rather because of the strength of the general market. The rise in new rails naturally helps prices of those rerolled from old standard sections.

We quote 25 to 45-lb. sections, rolled from new steel, 1.50c. base; rolled from old rails, 1.40c. base; standard rails, $40 per gross ton mill for Bessemer and open-hearth sections.

**Iron and Steel Bars.**—The market continues to gain in strength, as most of the independent makers have withdrawn from the market while those still taking business are quoting 1.50c. base, Pittsburgh. The Carnegie Steel Co. remains in the market and its price is 1.50c. for desirable tonnages, with an advance of about $2 per ton being asked on lots which are unattractive from a rolling mill standpoint. Iron bars do not seem to have caught the stride of the market and still are available as low as 2c. base for desirable tonnages.

We quote steel bars rolled from billets at 1.50c. to 1.60c.; reinforcing bars, rolled from billets, 1.50c. to 1.60c. base; reinforcing bars, rolled from old rails, 1.40c. to 1.45c.; refined iron bars, 2c. to 2.10c. in carloads, f.o.b. mill, Pittsburgh.

**Plates.**—Two large Eastern makers have announced a price of 1.60c., Pittsburgh. Independents here and in nearby districts are largely out of the market either because even 1.60c. does not show them a profit or they have all the business they can comfortably take care of. A Youngstown maker is asking 1.75c., but this quotation is higher than can be done to-day. We note a sale of 1000 tons of plates for pipe at 1.60c. base. The Carnegie Steel Co. remains in the market. The Bartlett-Heyward Co., Baltimore, recently was awarded a gas holder for installation in New York, taking about 1000 tons of plates.

We quote sheared plates, ¼ in. and heavier, tank quality, at 1.50c. to 1.60c., f.o.b. Pittsburgh.

**Cold-Finished Steel Bars and Shafting.**—All makers in the past week went to 1.90c. base, Pittsburgh, as a minimum price on cold-finished steel bars, this being an attempt to restore the recent normal differential of $8 per ton between hot-rolled and cold-finished steel bars. We note one transaction involving seven carloads of jobbers' specifications at around 1.75c. base, and a much larger tonnage also was entered at 1.80c. prior to the marking up of prices. Ground shafting holds unchanged at 2.25c. base, mill, for carloads.

**Hoops and Bands.**—Recent advance in hot-rolled strips to 2c. base, Pittsburgh, has been followed by an advance of $2 per ton to the same base for other hot-rolled flats, hoops and bands. The new price has not yet become established through sales, because most consumers had warning of the advance and placed their orders.

**Nuts and Bolts.**—Recent advance of 10 per cent in prices of nuts and bolts by Cleveland makers has been adopted by manufacturers in this district, the change becoming effective April 15. Local makers are quoting Nos. 1, 2, 3 head plow bolts at 60 per cent off list as against 60-10 per cent off list, the schedule of Cleveland makers, and on small semi-finished hexagon nuts, S. A. E. specifications, are quoting 80 and 2 tens against 80 and 3 tens, the Cleveland quotation. On track bolts 3c. base for carloads of a size still is quoted here, with 3.50c. base the less carload quotation. Prices are given on page 1107.

**Rivets.**—A continued increase in business is behind a firmer price stand by leading makers, who now are quoting large structural and ship rivets at $2.10 to $2.25 base per 100 lb. and large boiler rivets at the usual differential of $2 per ton. There has been no change in small rivets. Prices and discounts are given on page 1107.

**Spikes.**—The recent advance is firmly insisted upon by all makers against new business, but just before it was made the railroads rushed in with a good many orders which were entered at the old base of $2 per 100 lb. It is estimated that fully 20,000 kegs of standard spikes were booked and makers now are sold up for at least a month. Small spikes are not at all active because of the interruption to coal mine operations, due to the strike. Prices are given on page 1107.

**Structural Material.**—The trend of prices is upward, independent makers who are still in the market for orders now generally asking 1.60c., Pittsburgh. This price, however, has not yet found much basis in sales, because the Steel Corporation is inclined to pursue a conservative course with regard to prices and still is taking business at 1.50c. The American Bridge Co. has been awarded 1700 tons for the Oak Street Viaduct, Youngstown, Ohio, while the Jones & Laughlin Steel Co. will furnish 100 tons for the Odd Fellows' Home, Pittsburgh, North side. Bids against structural projects are beginning to reflect the stronger tendency in plain material prices, and $60 per ton, delivered and erected, which was done on a recent local award, probably represents the low point for the present. Plain material prices are given on page 1107.

**Hot-Rolled and Cold-Rolled Strips.**—The recently established bases of 2c. on hot-rolled strips and 3.65c. for cold-rolled, are firmly maintained with the demand good, and these prices readily obtained on tonnages for early delivery.

**Coal and Coke.**—Practically no quotable market exists at present. Production of coke in the Connellsville region has been very largely suspended, the bulk of the commercial offering being from the plants the owners of which have succeeded in getting the men back by promising them a share of any fancy prices that can be obtained. Blast furnace interests are balking at paying more than $4 to $4.25 and state that they would prefer to bank their furnaces rather than meet the demand of those who have coke for sale. It is doubtful whether more than $5, per net ton ovens, can be obtained from regular users of foundry coke. Some by-product coke is being offered from Fairmont, W. Va., at $6, Connellsville, but that price does not find much response either from iron producers or from those using coke for heating kilns. The principal activity in coal is in the product of the southern West Virginia and Kentucky fields. Coal from these sections prior to the strike was available at $1.50 or less, but the current market is from $2 to $2.25 as a result of purchases by Youngstown and lake front by-product plant operators. Freight rates on coal from these districts to Youngstown range $2.66 to $2.85 per ton. A little tonnage is being moved by rail to Toledo and Sandusky and thence by boat to Buffalo and Chicago.

**Old Material.**—The trend of prices still is upward and a further advance of 50c. per ton has been established in the steel works grade by actual sales to consumers. The fact that pig iron is getting scarcer and more costly is helping the scrap market both as to prices and to the demand, steel makers being anxious to keep up with their obligations by keeping their steel works going as fully as possible. Much inferior material is being shipped against contracts and rejections on account of quality are numerous. Settlement of the coal strike in the non-union districts will be followed by the lighting of a number of idle blast furnaces, but when this can be brought about is merely conjectural and in the meantime the advantage is with the dealers. Very high prices continue to be paid for railroad material, particularly for the better grades, such as knuckles, couplers and springs. Through an error the price of heavy melting steel at Johnstown, Pa., in last week's report was made to read $16.50; the price should have read $15.50.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows per gross ton:

| | |
|---|---|
| Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh | $16.50 to $17.00 |
| No. 1 cast, cupola size | 17.00 to 17.50 |
| Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. | 16.50 to 17.00 |
| Compressed sheet steel | 15.00 to 15.50 |
| Bundled sheets, sides and ends | 13.50 to 14.00 |
| Railroad knuckles and couplers | 17.50 to 18.00 |
| Railroad coil and leaf springs | 17.50 to 18.00 |
| Low phosphorus standard bloom and billet ends | 20.00 to 20.50 |
| Low phosphorus plates and other grades | 19.00 to 19.50 |
| Railroad malleable | 15.00 to 15.50 |
| Iron car axles | 25.00 to 26.00 |
| Locomotive axles, steel | 23.00 to 24.00 |
| Steel car axles | 17.50 to 18.00 |
| Cast iron wheels | 16.50 to 17.00 |
| Rolled steel wheels | 17.50 to 18.00 |
| Machine shop turnings | 12.25 to 12.75 |
| Sheet bar crop ends | 16.50 to 17.00 |
| Heavy steel axle turnings | 13.50 to 14.00 |
| Short shoveling turnings | 13.00 to 13.50 |
| Heavy breakable cast | 16.50 to 17.00 |
| Stove plate | 13.50 to 14.00 |
| Cast iron borings | 13.50 to 14.00 |
| No. 1 railroad wrought | 13.00 to 14.00 |

# Chicago

CHICAGO, April 18.

Buying of both iron and steel is the heaviest since 1920 and the price situation grows stronger from day to day. While there is no doubt that the coal strike is responsible in some measure for stiffening prices and increasing demand, the main reason is to be found in the diminishing ability of producers to make prompt deliveries. On structural shapes, bars and sheets, local mills are running at capacity and are booked into third quarter and the situation in plates also is steadily becoming just as tight. Consumers who have been accustomed to prompt deliveries, enabling them to replenish their needs from week to week, now find that they must lay in stocks ahead. In some cases, in fact, they have run short of material for immediate needs and have been forced to buy bars and shapes from Eastern mills on a Pittsburgh base.

While the leading interest has not yet followed the Inland Steel Co. in its advances on plates, shapes and bars, everything points to the taking of such action soon. One of the most encouraging aspects of the market lies in the activity in the building industry. Fabricating awards reported in this district this week total 46,000 tons, of whch 39,000 tons is represented by three large lettings.

Mill operations continue to improve. The Illinois Steel Co. is now operating at 83 per cent of capacity with its Gary works on an 89 per cent basis.

**Pig Iron.**—Local producers have advanced their prices $1 to $21, base furnace, and Southern iron is now up to $16 base, Birmingham, for second quarter delivery and $16.50 for third quarter. The lowest available price on Southern iron is that shipped by water and rail, which now figures $21.92, delivered Chicago, for second quarter and 50c. higher for third quarter. The market is strong and active. Bookings of Northern iron are the largest in two years and the heavy forward buying for third quarter and second half which has been in progress for the past two weeks is now accompanied by liberal purchases for prompt shipment, which promise to wipe out remaining stocks on furnace yards very soon. In fact, the leading producer expects to blow in another Iroquois furnace at an early date. Current sales range from 500 tons to several thousand tons and cover basic, malleable and foundry grades. Railroad equipment manufacturers have been particularly active buyers, one company of this class having closed for 10,000 tons of coke iron and 2000 tons of charcoal. Charcoal iron is also expected to advance, as there are only three Northern furnaces in blast and stocks on hand hardly cover the tonnage on the books. Among other special grades of iron which have been moving, copper free low phosphorus is conspicuous because of two 500-ton sales, one to a local consumer and the other to a Milwaukee user. Both were closed at $30, Valley furnace. Silvery has advanced $1 a ton and a few carload lots have moved at the new prices.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

| | | |
|---|---|---|
| Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago | | $26.00 |
| Northern coke, No. 1, sil. 2.25 to 2.75 | | 21.50 |
| Northern coke, foundry, No. 2, sil. 1.75 to 2.25 | | 21.00 |
| Northern high phos | | 21.00 |
| Southern No. 2, sec. quar | $21.92 to | 22.67 |
| Southern No. 2, third quar | 22.42 to | 23.17 |
| Malleable, not over 2.25 sil | | 21.00 |
| Basic | | 21.00 |
| Low phos. Valley furnace, sil. 1 to 2 per cent copper free | | 30.00 |
| Silvery, sil. 8 per cent | | 33.82 |

**Ferroalloys.**—Domestic producers of ferromanganese have advanced their prices to $70 seaboard, but foreign material is still available at $65 with a proviso that any duty imposed will be paid by the consumer. While talk of abandoning New Orleans as a price basing point in favor of Baltimore persists, some business is still being closed on the former base. It is understood that two large contracts for 50 per cent ferrosilicon have been closed at the low price of $55.

We quote 78 to 82 per cent ferromanganese, $73.40, delivered; 50 per cent ferrosilicon, $55, delivered; spiegeleisen, 16 to 18 per cent, $40.10, delivered.

**Steel Castings.**—Inquiries for miscellaneous castings required in cars let in recent weeks are commencing to appear. Among them is an inquiry for those required on 1000 cars to be built for the Louisville & Nashville. The tonnage of miscellaneous castings in this case is 440 tons. Purchases still to be made for cars on order cover 18,000 tons of miscellaneous castings alone.

**Cast-Iron Pipe.**—Milwaukee has readvertised 5620 tons of 54-in., 1130 tons of 36-in. and 180 tons of specials. Bids will be received until April 21, alternate figures to be taken on steel and wood pipe. Duluth has awarded 1000 tons to the National Cast Iron Pipe Co. and Youngstown let 300 tons to the United States Cast Iron Pipe & Foundry Co. Port Huron, Mich., took bids on a round tonnage April 17.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $47.10 to $48.10; 6-in. and above, $43.10 to $44.10; class A and gas pipe, $3 extra.

**Rails and Track Supplies.**—The Chesapeake & Ohio placed 2200 tons of tie plates with a local mill and the Erie has bought 3000 tons, part of which went to Chicago makers. The Missouri Pacific has distributed orders of 15,000 kegs of track spikes and bolts and is inquiring for a considerable quantity of tie plates and splice bars. The Missouri, Kansas & Texas has bought 4000 kegs of spikes and bolts and the Southern Pacific is in the market for 20,000 kegs. While most mills are now quoting 2.25c., Pittsburgh, on spikes, one important mill is still booking orders at 2.15c. Bolts are also firmer with the market ranging from 3c. to 3.15c., Pittsburgh. New business in standard rails is light. The Terminal Railroad Association of St. Louis has placed 800 tons with the Gary mill and the Pere Marquette is inquiring for 3500 tons. With the closing of the coal mines, the demand for light rails dropped sharply.

Standard Bessemer and open hearth rails, $40; light rails rolled from new steel, 1.50c., f.o.b. makers' mills.

Standard railroad spikes, 2.15c. to 2.25c., Pittsburgh; track bolts with square nuts, 3c. to 3.15c., Pittsburgh; tie plates, steel and iron, 1.75c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

**Bolts and Nuts.**—Most makers have advanced their prices. While jobbers and some consumers covered before the market became firm, considerable business has been booked since and some has been taken at the new quotations which follow:

Carriage bolts, ⅜ by 6-in. and smaller, rolled thread, 65 and 10 and 5 per cent off; cut thread and larger, 65 and 5 off. Machine bolts, ⅜ by 4-in. and smaller, rolled thread, 65 and 10 and 10 and 5 off; cut thread and larger, 65 and 10 and 5 off. Lag screws, 65 and 10 and 10 off. Plow bolts, No. 1, two and three heads, 60 off; other style heads, 20 per cent extra. Tire bolts, 65 and 10 and 5 off. Semi-finished hexagon nuts, 9/16 and smaller, U. S. S., 80 and 10 and 10 off; S. A. E., 80 and 10 and 10 and 10 off; ⅝-in. and larger, U. S. S., 80 off; S. A. E., 80 and 10 off. Hot pressed, square or hexagon nuts, blank or tapped, $5.25 off. These quotations are f.o.b. Pittsburgh or Western factory, according to the location of the buyer.

Jobbers quote structural rivets, 3c.; boiler rivets, 3.10c.; machine bolts up to ⅞ x 4 in., 60, 10 and 10 per cent off; larger sizes, 60 and 10 off; carriage bolts up to ⅞ x 6 in., 60 and 10 off; larger sizes, 55 and 5 off; hot pressed nuts, square and hexagon tapped, $3.75 off; blank nuts, $4 off; coach or lag screws, gimlet points, square heads, 65 and 5 per cent off. Quantity extras are unchanged.

**Structural Material.**—Activity in construction shows no abatement and fabricating awards during the past week include several large individual tonnages. Fabricators continue to buy for stock and in some cases in purchasing for immediate requirements have found it necessary to place orders with Eastern mills at Pittsburgh base price owing to inability to secure prompt delivery from local producers. While the Illinois Steel Co. has not yet followed the advance to 1.70c., Chicago, announced by the Inland Steel Co. last week, it is expected to do so. Fabricating awards include:

Great Northern Railroad, Ore Dock No. 2, Allouez, Wis., 12,000 tons, to American Bridge Co.

Stevens Hotel, Chicago, 15,000 tons, to Fort Pitt Bridge Works.

Fabrication of large steel pipe for Cedar River pipe line, Seattle, Wash., 12,200 tons, to Western Pipe & Steel Co.

Chicago, Burlington & Quincy, miscellaneous bridge work, 2496 tons, to American Bridge Co.

Chicago, Burlington & Quincy shop, Denver, 2130 tons, to Fort Pitt Bridge Works.

Indiana State Highway Commission, bridge at Hazelton, 700 tons, to Worden-Allen Co.

Western Electric Co.'s buildings No. 156 and No. 157, Hawthorne, Ill., 475 tons, to Worden-Allen Co.

Central Illinois Power Co., addition to Muddy power station, Harrisburg, Ill., 345 tons, to Kenwood Bridge Co.

Swine pavilion, State fair grounds, Sedalia, Mo., 300 tons, to Kansas City Structural Steel Co.

Addition to Chambers Estate Building, Kansas City, 250 tons, to Christopher & Simpson Iron Works.

Kansas City Stock Yards Co., live stock exposition building, 177 tons, to Kansas City Structural Steel Co.

Pending business includes:

Rebuilding of bridge, Omaha & Council Bluffs Street Railway Co., 3300 tons, bids to be in May 1.

Commissioners, Port of New Orleans, Poydras Street shed, 400 tons.

Federal Reserve Bank, Oklahoma City, Okla., 450 tons.

The mill quotation on plain material is 1.60c. to 1.70c., Chicago. Jobbers quote 2.38c. for plain material out of warehouse.

**Wire Products.**—The market is now at the peak of the spring buying movement and orders from both jobbers and manufacturers are liberal. While the coal strike may be one reason for heavy current demand, mills are of the opinion that it is accounted for more largely by a real betterment in the industrial situation of the country. Railroads also are buying nails, barbed wire and woven wire fencing at a better rate than for many months. The leading interests have not yet followed the advances of the independents. For prices see finished iron and steel, f.o.b. Pittsburgh, page 1107.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, $2.85 per 100 lb.; No. 9 and heavier bright basic wire, $3 per 100 lb.; common wire nails, $3 per 100 lb.; cement coated nails, $2.50 per keg.

**Plates.**—With heavy specifications coming in from car builders and oil tank fabricators and with orders from miscellaneous sources increasing, mills have substantial backlogs. They are not committed so far ahead on plates, however, as on bars and shapes. The leading interest has not yet advanced its price to 1.80c., Chicago, which is the minimum quotation of the independent company, but in view of the growing strength of the markets, such action is looked for soon.

The mill quotation is 1.60c. to 1.80c., Chicago. Jobbers quote 2.38c. for plates out of stock.

**Bars.**—Demand continues to increase in volume with orders coming from practically all classes of buyers. It is notable that both jobbers and consuming manufacturers are now buying for stock. Yet there is little business coming in that is speculative. Until recently buyers have been able to replenish their stocks from week to week, but with mill deliveries steadily growing more remote and the coal strike threatening the industry, it is now necessary to cover ahead to be sure that material will be on hand when needed. Local mills producing mild steel bars are operating at capacity with bookings which will carry them into third quarter. The market is strong, but the leading interest has not yet followed the advance of the Inland Steel Co. to 1.70c., Chicago. The volume of reinforcing bar business shows no recession. The Inland Steel Co. has finally been awarded 5000 tons for the Jones Island sewage disposal plant, Milwaukee. The Corrugated Bar Co. will furnish 150 tons for a bridge at Hazelton, Ind. The Endion reservoir, Duluth, calls for 750 tons and the Lincoln storage warehouse, Milwaukee, will take 400 tons. The Santa Fe is in market for 100 tons for miscellaneous bridges. Many users of mild steel bars, finding it increasingly difficult to obtain early deliveries on that material, are now turning to bar iron, with the result that the latter is on a firmer basis, prices having advanced to a minimum of 1.65c., Chicago. Rail carbon steel bars are also showing strength, one local mill having announced an advance to 1.60c., Chicago, while the minimum going price on material from other mills is 1.55c. A particularly encouraging feature of the demand for hard steel bars is the increased interest shown by farm implement and barn equipment makers. A round tonnage has been placed by the latter for the first time since September, 1920.

Mill prices are: Mild steel bars, 1.60c. to 1.70c., Chicago; common bar iron, 1.65c., Chicago; rail carbon, 1.55c. to 1.60c. mill or Chicago.

Jobbers quote 2.28c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.15c. for rounds and 3.65c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2c. base. Hoops, 3.13c. Bands, 2.88c.

**Old Material.**—While some consumers are trying to resist price advances, buying is steadily growing more general, with some classes of users taking liberal tonnages while others are covering their needs cautiously. Steel mills are the heaviest buyers, a fact which is accounted for by both their increasing business and the desirability of using more scrap in the open hearths when the ominous character of the coal strike makes it doubtful policy to blow in additional blast furnaces. Orders are also being placed by all classes of foundries and to a limited extent by iron mills. Prices have generally advanced. Railroad offerings include: Rock Island, 4000 tons; Northern Pacific, 3000 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

| | |
|---|---|
| *Per Gross Ton* | |
| Iron rails | $17.00 to $17.50 |
| Cast iron car wheels | 19.00 to 19.50 |
| Relaying rails | 20.00 to 25.00 |
| Rolled or forged steel car wheels | 16.00 to 16.50 |
| Steel rails, rerolling | 14.50 to 15.00 |
| Steel rails, less than 3 ft. | 15.00 to 15.50 |
| Heavy melting steel | 13.75 to 14.00 |
| Frogs, switches and guards cut apart | 13.75 to 14.00 |
| Shoveling steel | 13.75 to 14.00 |
| Low phos., heavy melting steel | 16.00 to 16.50 |
| Drop forge flashings | 9.50 to 10.00 |
| Hydraulic compressed sheet | 10.00 to 10.50 |
| Axle turnings | 10.00 to 10.50 |
| *Per Net Ton* | |
| Iron angles and splice bars | 15.50 to 16.00 |
| Steel angle bars | 12.50 to 13.00 |
| Iron arch bars and transoms | 17.00 to 17.50 |
| Iron car axles | 21.00 to 21.50 |
| Steel car axles | 15.00 to 15.50 |
| No. 1 busheling | 10.00 to 10.50 |
| No. 2 busheling | 6.75 to 7.25 |
| Cut forge | 12.00 to 12.50 |
| Pipes and flues | 9.00 to 9.50 |
| No. 1 railroad wrought | 12.00 to 12.50 |
| No. 2 railroad wrought | 12.00 to 12.50 |
| Steel knuckles and couplers | 14.00 to 14.50 |
| Coil springs | 14.00 to 14.50 |
| No. 1 machinery cast | 15.00 to 15.50 |
| No. 1 railroad cast | 14.50 to 15.00 |
| Low phos. punchings | 12.75 to 13.25 |
| Locomotive tires, smooth | 11.50 to 12.00 |
| Machine shop turnings | 6.50 to 7.00 |
| Cast borings | 8.00 to 8.50 |
| Stove plate | 13.75 to 14.25 |
| Grate bars | 12.00 to 12.50 |
| Brake shoes | 12.50 to 13.00 |
| Railroad malleable | 14.00 to 14.50 |
| Agricultural malleable | 14.00 to 14.50 |

## Rates on Foundry Flasks

WASHINGTON, April 18.—Passing upon the case of the American Manganese Steel Co. vs. Director-General, B. & O. *et al.*, the Interstate Commerce Commission yesterday handed down a decision of unreasonableness, made an award of reparation and entered an order to establish a reasonable rate on iron foundry flasks, from Chicago Heights to Oakland, Cal. The shipments were made in September, 1919. The commission held that the fifth class rate of $2.19 which was applied was unreasonable, to the extent it exceeded $1.125, the commodity rate applicable on rough iron and steel castings and ingot molds.

President Arthur T. Murray, of the American Bosch Magneto Co., Springfield, Mass., states that the company's business prospects indicate that it will have employment for at least 2000 workers by the end of the current year. There are 1200 at work now, and others will be added from time to time. At this time last year, the company had under 700 employed.

The Pennsylvania Foundry Supply Co., Liberty Building, Philadelphia, foundry supplies and equipment, is now the sole producer and distributer of the one-piece chaplet, which has been on the market for a number of years. All sizes will be carried in stock for prompt shipment.

# New York

NEW YORK, April 18.

**Pig Iron.**—Owing to the limited supply of pig iron due to banking of furnaces caused by the coal strike, prices have advanced about $2 and minimum quotations are now $22 for No. 2 plain, eastern Pennsylvania or Buffalo furnace, with No. 2X selling at $22.50 and No. IX at $23.50. Some furnaces are asking $24, but they are really out of the market. There is no runaway market or great rush of buyers. Southern iron could be obtained at about $26, delivered, but none has been sold in this territory. Even small quantities of eastern Pennsylvania iron are sold at the figures above mentioned. There is no Virginia iron except high silicon obtainable, and that can be had at about $22.50, furnace, or about the same as the price at which No. 2 plain last sold.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia:

| | |
|---|---|
| East. Pa. No. 1 fdy., sil. 2.75 to 3.25 | $25.52 |
| East. Pa. No. 2X fdy., sil. 2.25 to 2.75 | 24.52 |
| East. Pa. No. 2 fdy., sil. 1.75 to 2.25 | 23.52 |
| Buffalo, sil. 1.75 to 2.25 | 27.46 |
| No. 2 Virginia, sil. 1.75 to 2.25 | 28.56 |

**Ferroalloys.**—Contrary to expectations British sellers of ferromanganese have not advanced their price to $70, seaboard, the quotation of American producers announced a week ago. Sales of several hundred tons have been made by British producers in the past week at $65, seaboard, and demand is confined to moderate amounts with no large requirements in prospect. The spiegeleisen market has been fairly active and prices have advanced to $35, furnace, for the 20 per cent grade and $34 for the 16 to 19 per cent grade. The coke situation is interfering with production and one of the leading producers is temporarily out of the market. There is no activity in manganese ore. Sales of ferrosilicon continue moderately numerous at prevailing prices and demand for ferrochromium is also fairly good. Quotations are as follows:

*Ferroalloys*

| | |
|---|---|
| Ferromanganese, domestic, seaboard, per ton | $70.00 |
| Ferromanganese, British, seaboard, per ton | $65.00 |
| Spiegeleisen, 16 to 19 per cent, furnace, per ton | $34.00 |
| Spiegeleisen, 20 per cent | $35.00 |
| Ferrosilicon, 50 per cent, delivered, per ton | $55.00 to $60.00 |
| Ferrotungsten, per lb. of contained metal | 40c. to 50c. |
| Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered | 13c. |
| Ferrovanadium, per lb. of contained vanadium | $4.00 |

*Ores*

| | |
|---|---|
| Manganese ore, foreign, per unit, seaboard | 25c. to 26c. |
| Tungsten ore, per unit, in 60 per cent concentrates | $2.00 up |
| Chrome ore, 40 to 45 per cent $Cr_2O_3$, crude, per net ton, Atlantic seaboard | $20.00 to $25.00 |
| Chrome ore, 45 to 50 per cent $Cr_2O_3$, crude, per net ton, Atlantic seaboard | $25.00 to $27.00 |
| Molybdenum ore, 85 per cent concentrates, per lb. of $MoS_2$, New York | 45c. |

**Warehouse Business.**—While present evidence is that April will not show as much improvement as did March, business in this district, on the whole, is good. Prices are extremely stiff, in sympathy with the higher mill prices, and there is a growing assurance among warehouses that within a very short time there will be an increase in quotations, giving a wider margin of profit. Sheet prices, both black and galvanized, have been successfully stiffened up to 4.25c. per lb. and 5.25c. per lb. base for black and galvanized sheets respectively. A few dealers are quoting 4.15c. and 5.15c. per lb. and there are still transactions at 4c. and 5c. per lb., these latter being the exception. Prices on mild steel bars are strong and warehouses carrying structural material report good business in this line from local building operations. Wrought iron and steel pipe warehouses report a slight improvement and less tendency to shade. There are prospects of a mill increase in standard steel pipe shortly. One warehouse handling this material reports that March sales were not only better than February, but that March exceeded March, 1921, by several thousand dollars, despite the fact that prices are now from $50 to $60 per ton lower than at this time last year, showing considerably heavier shipments. April, however, is not expected to show up as well as March. Brass and copper sellers report business active, prices stiff, and no change. We quote prices on page 1122.

**High Speed Steel.**—The market shows a week to week improvement in the number of sales, the size still being small. Prices are still quotable at from 75c. to 80c. per lb. for 18 per cent tungsten high speed steel with special brands of some companies ranging up to 95c. per lb.

**Finished Iron and Steel.**—The Midvale Steel & Ordnance Co. has advanced its price on plates, shapes and bars to 1.60c., Pittsburgh; the Bethlehem Steel Co. has advanced to 1.60c. on plates and shapes and the Lukens Steel Co. has made 1.60c. its price on plates. Other independent companies are accepting orders with a considerable degree of caution. For example, the district office of one company has been instructed to accept no order in excess of 100 tons without submitting the inquiry to the mill. Other companies go further and insist that inquiries of any size be submitted before quotations are given. All of this is due to the uncertainty over the coal and coke situation. With a great deal of structural steel work in prospect, steel fabricators are somewhat worried over the price situation. They fear that any precipitate rise in the price of steel may discourage builders whose work has not quite gotten to the point of requesting bids. Steel companies, on the other hand, do not believe that a difference of a few dollars a ton in the cost of steel will have such effect on building operations. Considerable work was closed in the past week, including the following:

Apartments at Madison Avenue and Eighty-sixth Street, 3000 tons, to Taylor Steel Construction Co.; steel to be fabricated by American Bridge Co.

New York (American League) baseball park, 2000 tons, to American Bridge Co.; 900 tons of concrete reinforcing bars to Concrete Steel Co.

Apartments for Thomas Lee, New York, 3000 to 4000 tons, to Post & McCord; steel to be fabricated by American Bridge Co.

Good Old Worsted Co., Sanford, Me., 2000 tons, to the American Bridge Co.

Subway entrance, 168th Street, New York, 300 tons, to the Phoenix Bridge Co.

For the Fagan Iron Works, Jersey City, 350 tons, to the Bethlehem Steel Bridge Corporation.

Apartment, Seventy-first Street and Broadway, 1500 tons, to the Harris Structural Steel Co.

Apartment, Grand Concourse, New York, 1400 tons, to the Bethlehem Fabricators, Inc.

Joseph Bancroft Co., Reading, Pa., 300 tons, to the McClintic-Marshall Co.

Power house, Cumberland Light & Power Co., Portland, Me., 250 tons, to the Shoemaker-Satterthwait Bridge Co.

Power house, U. G. I. Contracting Co., Norristown, Pa., 1000 tons, to the Shoemaker-Satterthwait Bridge Co.

Junior high school, Wilkes-Barre, 850 tons, to the Phoenix Bridge Co.

Sun office building, Philadelphia, 1200 tons, to the Phoenix Bridge Co.

Power house, Municipal Gas Co., Albany, N. Y., 900 tons, to the American Bridge Co.

Southern Railway bridge at Bristol, Tenn., 250 tons, to the Virginia Bridge & Iron Co.

Talbot Mills, Billerica, Mass., 300 tons, to the Eastern Bridge & Structural Co.

Bridge work for the Lehigh Valley, 800 tons, to the Phoenix Bridge Co., and 100 tons to the American Bridge Co.

New projects in the market are as follows:

Apartment building for Bing & Bing, Lexington Avenue and Forty-sixth Street, New York, 1800 tons.

Apartment building east of Central Park, John Lowry, builder, 1300 tons.

Blumenthal apartments, Broadway at Ninety-first Street, 1400 tons.

Thomas Jefferson high school, Brooklyn, 2100 tons.

Jefferson Medical College addition, Philadelphia, 1750 tons.

Stadium for the University of Pennsylvania, Philadelphia, 2000 tons, bids to be taken April 21.

Bridge material for the New York Central, 300 tons, bids to be taken April 21.

Bolts and nuts have been advanced by Eastern makers. Large machine bolts, which were quoted at 70 and 10 per cent off list, are now 65, 10 and 5 per cent off list; small machine bolts, rolled thread, 65, 10, 10 and 5 per cent off list; cut thread, 65, 10 and 5. U. S. standard hot pressed nuts are 5.25c. per lb. off list and c. p. t. and c. nuts, 5c. off list. Track bolts, which have been quoted at 3.25c., are now 3.50c. per lb., Pittsburgh. Bar iron has been advanced to 1.50c., Pittsburgh.

We quote for mill shipments, New York, as follows: Soft steel bars, plates and structural shapes, 1.88c.; bar iron, 1.88c. On export shipments the freight rate is 28.5c. per 100 lb. and the domestic rate is 38c.

**Cast-Iron Pipe.**—Intense activity continues through-

out the New England district. A temporary lull is apparent in municipal tenders, but private buying is still large. Prices are strong and if pig iron continues on its upward trend producers of cast-iron pipe will probably make another increase in prices soon. We quote per net ton, f.o.b New York, in carload lots, as follows: 6-in. and larger, $48.80; 4-in. and 5-in., $53.50; 3-in., $63.80, with $4 additional for Class A and gas pipe.

**Coke.**—Foundry coke has advanced owing to the strike of coal miners and $5 now seems to be the lowest price at which good grade coke can be purchased. Reports from the Connellsville district are not reassuring.

**Old Material.**—The market continues active, but there is a slightly lessened upward tendency in prices, evidently because of the situation of mills on coal. While heavy melting steel sold during the early part of last week in Pittsburgh up to as high as $17.50 per ton, during the latter part of the week and this week $16.25 to $16.50 per ton was about the best that could be done. Current quotations, however, continue stiff and improvement will probably resume with the air cleared of the coal strike. Prices on railroad scrap of all kinds continue strong. A fair estimate of buying prices for this district on No. 1 heavy melting steel is from $9.50 to $10 per ton. Iron and steel pipe registers a slight increase, as high as $9.25 per ton being paid.

Buying prices per gross ton, New York, follow:

| | |
|---|---|
| Heavy melting steel, yard | $9.50 to $10.00 |
| Steel rails, short lengths, or equivalent | 10.50 to 11.00 |
| Rerolling rails | 10.50 to 11.00 |
| Relaying rails, nominal | 27.00 to 28.00 |
| Steel car axles | 10.75 to 11.25 |
| Iron car axles | 18.50 to 19.00 |
| No. 1 railroad wrought | 11.00 to 11.50 |
| Wrought iron track | 10.50 to 11.00 |
| Forge fire | 5.50 to 6.00 |
| No. 1 yard wrought, long | 10.50 to 11.00 |
| Cast borings (clean) | 7.00 to 7.50 |
| Machine-shop turnings | 6.50 to 7.00 |
| Mixed borings and turnings | 6.00 to 6.50 |
| Iron and steel pipe (1 in. diam., not under 2 ft. long) | 8.75 to 9.25 |
| Stove plate | 9.75 to 10.25 |
| Locomotive grate bars | 10.50 to 11.00 |
| Malleable cast (railroad) | 9.00 to 9.50 |
| Cast-iron car wheels | 10.50 to 11.00 |

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

| | |
|---|---|
| No. 1 machinery cast | $17.00 to $17.50 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 16.00 to 16.50 |
| No. 1 heavy cast, not cupola size | 14.00 to 14.50 |
| No. 2 cast (radiators, cast boilers, etc.) | 11.00 to 11.50 |

## Pittsburgh Foundrymen Nominate Officers

The nominating committee of the Pittsburgh Foundrymen's Association presented the following lists of officers at the regular monthly meeting of the organization at the General Forbes Hotel, Monday evening: President, Samuel B. Cuthbert, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa.; vice-president, John W. Guay, Fort Pitt Steel Casting Co., McKeesport, Pa.; secretary and treasurer, William J. Brant; executive committee, F. H. Clay, Allegheny Steel Co., Brackenridge, Pa.; John Field, Union Steel Casting Co., Pittsburgh; Henry P. Spitker, Sterrett-Thomas Foundry Co., Pittsburgh; William B. Robinson, THE IRON AGE, Pittsburgh; and Thomas A. Reynolds, the McConway-Torley Co., Pittsburgh.

Oliver Stubbs, president Institution of British Foundrymen, and Thomas Firth, a past president of that organization, who are making a tour of steel plants and foundries of the country, will be the guests of the Pittsburgh Foundrymen's Association April 27, 28 and 29. E. D. Frohman, vice-president, the S. Obermayer Co., was the speaker at Monday evening's meeting, giving an interesting talk on high temperature cements.

Wage distribution for March by industries at Youngstown, Ohio, aggregated $3,570,422, a gain of $186,980 above the February disbursement and $297,434 above the January payroll. Managers predict the April distribution will exceed $4,000,000.

# Philadelphia

PHILADELPHIA, April 18.

The coal strike has brought about further advances in prices of iron and steel within the past few days. Nearly every Eastern mill has advanced plates, shapes and bars to 1.60c., Pittsburgh; bar iron has been advanced $1 a ton to 1.50c., Pittsburgh; bolts and nuts have gone up about 10 per cent and there is a generally firmer tendency in prices of other steel products. Even more drastic is the change in the pig iron situation. Every merchant furnace interest except one in the eastern Pennsylvania district is out of the market, and this seller has advanced its prices to $23.50, furnace, for No. 2 plain, $24 for No. 2X and $25 for No. 1X. No other foundry iron seems to be available except from stock piles, and the analysis of such iron is not always up to recognized standards.

So far no Eastern blast furnace has been obliged to bank because of lack of coke, but at least one is on the verge of doing so, and the others are taking no chance of becoming overloaded with orders. The steel plants of this district are not seriously alarmed as yet over the coal and coke situation, but they are pursuing a cautious policy, principally because they do not wish to put too much business on their books at present prices. They recognize that an early settlement of the coal strike might bring an easing of prices, whereas a continuation of the strike for several weeks is expected to force prices still higher. In either event, they do not wish to be caught with large commitments, which would necessitate a revising of contracts to a lower level, should prices decline later or a loss of profitable business because of inability to make deliveries, should the market trend continue upward for some weeks. The policy of one company is to take nothing which cannot be shipped within 30 days, and to a degree other companies are following this precautionary method of quoting.

**Pig Iron.**—Because of uncertainty over the coke situation, every merchant blast furnace interest in eastern Pennsylvania, with one exception, is out of the market, and that company has advanced its prices to $23.50, furnace, for No. 2 plain; $24 for No. 2X and $25 for No. 1X. One or two other furnaces are offering iron from stock piles, but a good deal of such iron is off grade. One furnace interest has made no quotations within a week, except in one instance where a regular customer required protection on 200 tons of No. 2X, on which $25, furnace, was quoted. While no large volume of business is pressing upon the market, consumers are urging the hurrying of shipments, and in one case a consumer requested that his entire second quarter purchase be shipped this month. This request the furnace was obliged to turn down because of its desire to treat all customers alike. There is a steady demand for small lots for prompt shipment and the higher prices, which represent an advance within a week of about $3 a ton for Philadelphia delivery, have been paid without question, especially by those who are familiar with the high prices being asked for such spot coke as is obtainable for furnace use. Ten carloads of furnace coke were sold to-day at $5.75 per ton, Connellsville, and another lot of 10 cars was offered at $6, Connellsville. Foundry coke has been sold at $6, Connellsville. Notwithstanding the sharp advance in foundry iron prices within the week, there is at present no serious danger of a scarcity of iron, though a shortage may develop, should the coal strike continue for another 30 days. There is a substantial tonnage of iron in stock at some Eastern furnaces, which will supply ordinary demands for the time being. Within three or four weeks the Midvale Steel & Ordnance Co. will put a second furnace in blast at Coatesville, and a part of the output will be foundry iron. An Eastern subsidiary of the Steel Corporation has closed for close to 10,000 tons of basic, on which the price is reported to have been $21.50, delivered. On any new inquiry for basic iron at least $22, furnace, would now be quoted. Last reported sales of gray forge iron were at $21, delivered, but last Saturday an Eastern consumer came into the market for 1000 tons and is re-

ported to have been quoted about $23, furnace. No change has occurred in prices of low phosphorus grades, which are not in demand.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to $1.54 per gross ton:

| | |
|---|---|
| East. Pa. No. 2 plain, 1.75 to 2.25 sil. | $24.90 |
| East. Pa. No. 2X, 2.25 to 2.75 sil. | 25.40 |
| Virginia No. 2 plain, 1.75 to 2.25 sil. | $27.74 to 28.24 |
| Virginia No. 2X, 2.25 to 2.75 sil. | 28.24 to 28.74 |
| Basic delivery eastern Pa. | 21.50 to 22.00 |
| Gray forge | (Nominal) 21.00 |
| Malleable | 24.00 to 25.00 |
| Standard low phos. (f.o.b. furnace) | 30.00 |
| Copper bearing low phos. (f.o.b. furnace) | 28.00 |

**Ferroalloys.**—Domestic makers of ferromanganese, who are quoting $70, seaboard, are not booking any business at that figure, as British producers are still quoting $65, seaboard. Very little business is being done.

**Semi-Finished Steel.**—Prices for billets are unchanged at $29.50, Pittsburgh, for rerolling quality and $34.50 for forging quality. A Youngstown maker of sheet bars has advanced its price to $35, Youngstown, but other makers still quote $31, Pittsburgh.

**Plates.**—A considerable volume of plate business has been placed with Eastern mills in the past week. One company on one or two days of the week booked tonnage that was far in excess of anything that has been done since the early part of 1920. Prices have been advanced by all of the Eastern mills, except two, to 1.60c., Pittsburgh, and these two mills probably will advance within the next week. One mill reports having been paid 1.70c., Pittsburgh, on a few small lots. An Eastern railroad has placed 5000 tons of car repair plates with a Pittsburgh mill. The 12,000 tons for a pipe line at Seattle, Wash., recently reported as having been divided about equally between two Eastern mills, has been placed with a Pittsburgh company by the Western Steel & Pipe Co., Seattle, which will do the fabricating. We quote sheared and universal plates at 1.50c. to 1.60c., Pittsburgh.

**Structural Material.**—A substantial volume of orders for plain material is coming to Eastern mills at 1.50c., Pittsburgh. Late last week most of the mills advanced to 1.60c., but a considerable number of quotations at the former price are outstanding and will be acted upon shortly. Bids were taken to-day (Tuesday) on a Philadelphia city pier, which will require about 7000 tons of steel, this being in addition to the recent job of the same size which went to the American Bridge Co. Plain material is firm at 1.50c. to 1.60c., Pittsburgh.

**Bars.**—In line with the advance of $2 a ton on plates and shapes, some of the mills have advanced steel bars to 1.60c., Pittsburgh. Considerable business was put on the books within the past week at 1.50c., particularly in deformed steel bars. Eastern bar iron makers have advanced their price $1 a ton to 1.50c., Pittsburgh.

**Bolts and Nuts.**—An advance of about 10 per cent on bolts and nuts has been put into effect by some of the Eastern makers, the new basis being 65, 10 and 5 per cent off list for large machine bolts instead of 70 and 10, which had been quoted.

**Sheets.**—The new prices on sheets, an advance of $3 a ton, which became effective on April 1, has now been confirmed by numerous sales. We quote No. 10 blue annealed, 2.40c.; No. 28 black, 3.15c. and No. 28 galvanized, 4.15c., Pittsburgh.

**Warehouse Business.**—Sales of steel out of stock continue to show slight gains each week. Prices are unchanged and for Philadelphia delivery are as follows:

Soft steel bars and small shapes, 2.36c.; iron bars (except bands), 2.36c.; round edge iron, 2.55c.; round edge steel, iron finish, 1½ x ½ in., 2.55c.; round edge steel planished, 3.30c.; tank steel plates, ¼-in. and heavier, 2.46c.; tank steel plates, 3/16-in., 2.61c.; blue annealed steel sheets, No. 10 gage, 3.25c.; black sheets, No. 28 gage, 4c.; galvanized sheets, No. 28 gage, 5c.; square twisted and deformed steel bars, 2.50c.; structural shapes, 2.46c.; diamond pattern plates, ¼-in., 4.35c.; 3/16-in., 4.50c.; spring steel, 3.50c.; round cold-rolled steel, 3c.; squares and hexagons, cold-rolled steel, 3.50c.; steel hoops, No. 13 gage and lighter, 3.11c.; steel bands, No. 12 gage to 3/16-in., inclusive, 2.86c.; iron bands, 3.90c.; rails, 2.36c.; tool steel, 8c.; Norway iron, 5.50c.; toe calk steel, 4.50c.

**Old Material.**—Prices of various grades of old material continue to move upward. The Bethlehem Steel Co. is in the market for a substantial tonnage of heavy melting steel and has paid $15, delivered, Bethlehem and Steelton, Pa. About 1500 to 2000 tons of the same grade was bought a few days ago by a Delaware steel company at $14, delivered. Scrap brokers declare that it is very difficult to buy from dealers, who are holding their stocks in anticipation of further rises. Demand from the Pittsburgh district is substantial for heavy melting steel and blast furnace borings and turnings. We quote for delivery at consuming points as follows:

We quote for delivery at consuming points in this district as follows:

| | |
|---|---|
| No. 1 heavy melting steel | $14.00 to $15.00 |
| Scrap rails | 14.00 to 15.00 |
| Steel rails, rerolling | 17.00 to 17.50 |
| No. 1 low phos., heavy 0.04 and under | 20.50 to 21.00 |
| Cast iron car wheels | 16.00 to 16.50 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| No. 1 yard wrought | 15.00 to 15.50 |
| No. 1 forge fire | 11.50 to 12.00 |
| Bundled sheets (for steel works) | 12.00 to 12.50 |
| No. 1 busheling | 13.00 to 14.00 |
| No. 2 busheling | 10.00 to 11.00 |
| Turnings (short shoveling grade for blast furnace use) | 11.50 to 12.00 |
| Mixed borings and turnings (for blast furnace use) | 11.00 to 11.50 |
| Machine-shop turnings (for rolling mill and steel works use) | 12.00 to 12.50 |
| Heavy axle turnings (or equivalent) | 12.50 to 13.00 |
| Cast borings (for steel works and rolling mills) | 12.00 to 12.50 |
| Cast borings (for chemical plants) | 15.00 to 16.00 |
| No. 1 cast | 17.50 to 18.00 |
| Railroad grate bars | 14.50 to 15.00 |
| Stove plate (for steel plant use) | 14.50 to 15.00 |
| Railroad malleable | 12.50 to 13.00 |
| Wrought iron and soft steel pipes and tubes (new specifications) | 14.00 to 14.50 |
| Shafting | 19.00 to 20.00 |

# Cleveland

CLEVELAND, OHIO, April 18.

**Iron Ore.**—The stiffening up of pig iron prices has caused a change in the view of some sellers regarding ore prices for the season and there is some talk now that price reductions may be limited in amount to whatever reductions are made in lake carrying charges and in rail carrying charges from the mines to upper lake docks. It is the general belief that ore prices will not be named until the Interstate Commerce Commission passes on the rate question. At the time the commission suspended the proposed new tariffs on ore making a 20 per cent reduction in rates from Lake Erie ports to furnaces, it set April 24 as the date of taking up the ore rate controversy and many in the ore trade look for an announcement of rate reductions by the Interstate Commerce Commission by May 1. Ice conditions are such that navigation may open almost any day, but in view of the unsettled situation in respect to carrying charges, shippers are making no arrangements to move ore and very few, if any, cargoes will be shipped before May. Some of the large consuming interests having long time contracts would start to take ore, but, with a possibility of lower freight rates, they are holding off. Some of the mining companies are now considering a wage advance. Many of the independent mines started up early in the year with wage reductions making the scale for common labor 50c. per day lower than paid by the Steel Corporation. These reduced wages were placed in effect as an emergency measure to furnish employment for the miners.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, $6.45; Old range non-Bessemer, 51½ per cent iron, $5.70; Mesabi Bessemer, 55 per cent iron, $6.20; Mesabi non-Bessemer, 51½ per cent iron, $5.55.

**Pig Iron.**—Buying increased in volume during the past week and prices advanced about $1 per ton on all grades. While the possibility of a curtailment in production because of the coal strike was to some extent a factor in stimulating sales, the foundry melt has increased materially during the past few weeks, and has caused a more active demand for iron. Some steel makers who were recent sellers of basic iron have become buyers because of the strike situation. Basic iron now seems to be firm at $20 and one producer reports that it could sell 15,000 to 20,000 tons at that price. We note the sale of 10,000 tons of basic iron for shipment from Cleveland at $19.50, Valley, but the

seller has since announced his withdrawal from the market until the price gets up to cost. A 10,000-ton lot of basic iron was also sold by a Valley producer. Small lot sales of foundry iron have been made at $21, base, by both lake and Valley furnaces, and $20.50 is now the minimum price quoted by lake furnaces that can make delivery. One Cleveland interest is still quoting foundry iron at $20 subject to its being able to start up a furnace and make delivery. Another Cleveland producer booked several thousand tons during the week at $20 and has advanced its price to $21. One lake furnace sold 15,000 to 20,000 tons of foundry and malleable iron during the week in lots up to 2000 tons, all for the second quarter, and has declined to take on additional business for a more extended delivery. The American Radiator Co. purchased 1000 tons for its Detroit plant. The Westinghouse Electric & Mfg. Co. has sent out an inquiry for foundry iron for the third quarter requirements for all its plants. Prices on silvery iron and Bessemer ferrosilicon have been advanced $1 per ton. Considerable Southern iron in lots of 300 tons and under were sold during the week at $15.50, but the seller Monday advanced his price to $16 for 1.75 to 2.25 per cent silicon iron for the second quarter and announced a $16.50 price for the third quarter. Southern iron sales included 500 tons to a Pittsburgh district sanitary ware manufacturer. The coal strike has so far not interfered with the operations of any furnaces in this district, but the McKinney Steel Co. has banked one furnace because of the lack of certain ore required for a mixture.

Two Valley producers this week marked up prices on foundry iron $1 a ton to $21, and small lot sales have been made at that price.

Quotations below are f.o.b. local furnace for Northern foundry iron, not including a 56c. switching charge. Other quotations are delivered Cleveland, being based on a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and a $6.67 rate from Birmingham:

| | |
|---|---|
| Basic | $21.96 |
| Northern No. 2 fdy., sil. 1.75 to 2.25 | $20.00 to 21.00 |
| Southern fdy., sil. 1.75 to 2.25 | 22.67 |
| Ohio silvery, sil. 8 per cent | 31.86 |
| Standard low phos., Valley furnace | 30.00 to 31.00 |

**Semi-Finished Iron and Steel.**—Some producers have withdrawn from the market and there is talk of a shortage on sheet bars and of an advance to $33 or $35. A few small lot sales are reported, all at the regular $31 price.

**Finished Iron and Steel.**—The finished steel market continues active in orders for miscellaneous lots of steel bars, plates and structural material, but the volume of buying is not so heavy as two or three weeks ago, when advancing prices were responsible for bringing out a heavy volume of orders. While a limited number of sales are being made by independent mills at 1.60c. for steel bars, plates and structural material, the leading interest is not asking above the 1.50c. base. Some of the independent mills are going very slow in taking on additional orders, as they are filled up for several weeks and are not inclined to book much additional tonnage until the coal strike situation clears up. The strike in the building trades in Cleveland which has tied up most of the larger construction work since March 1 has been settled and this is expected to result in more activity in placing new structural work. The Fort Pitt Bridge Works has taken the Fenway Hall family hotel building, Cleveland, requiring 1200 tons of steel and the Bellefontaine Bridge Co. has taken 850 tons for the new plant of the Sandusky Cement Co., Cleveland. The Clover Leaf Railroad has placed 4000 tons of rails with the Carnegie Steel Co. and has another 1000 tons pending. Hard steel reinforcing bars have become generally established at 1.50c., or an advance of $2 a ton. Hot strip steel is active and very firm at 2c., and small lot sales are being made at 2.10c.

Jobbers quote steel bars, 2.21c.; plates and structural shapes, 2.46c.; No. 9 galvanized wire, 3c.; No. 9 annealed wire, 2.50c.; No. 28 black sheets, 3.75c.; No. 28 galvanized sheets, 4.75c.; No. 10 blue annealed sheets, 3.06c. to 3.10c.; hoops and bands, 2.71c.; cold-rolled rounds, 3.25c.; flats, squares and hexagons, 3.75c.

**Sheets.**—Specifications are heavy on recent contracts, but very little new business is coming out. Some of the Valley mills have withdrawn prices, expecting that should the coal strike be of long duration their costs of production will be increased because of an advance in the cost of fuel. Cleveland jobbers who are covered with contracts at the old prices are still taking carload lots of sheets for mill shipment at 3c. for blank sheets and 4c. for galvanized or $3 a ton lower than the present mill prices.

**Warehouse Business.**—Warehouse business is very good in all lines, showing a marked gain over March. Prices are firm.

**Cast Iron and Steel Pipe.**—The Peter W. Connelly Co., Kent, Ohio, was low bidder for three and a half miles or 2475 tons of 60-in. steel pipe for the Cleveland Water Works, its bid for lock-bar pipe laid being $510,607, as compared with a bid of $714,607 for cast-iron pipe. The original plans called for about nine miles of pipe, but additional purchases will be deferred. Bids were also taken for 2400 tons of cast iron water pipe, the bid of the United States Cast Iron Pipe & Foundry Co., the only bidder, being f.o.b. Cleveland: 3-in., $52.50; 4-in., $46.50; 6 to 48-in., $45.50. On the 60-in. cast-iron pipe, $40 was bid.

**Coke.**—Foundry coke has advanced to $5.75 to $6.25 for standard Connellsville makes for prompt shipment and sales have been made at these prices, although most foundries have good stocks. Sales of Virginia foundry iron are reported at $5.50.

**Bolts, Nuts and Rivets.**—Cleveland bolt and nut manufacturers advanced prices April 14 about 10 per cent on all items except tapped hot-pressed and cold-punched nuts. A good volume of business was booked last week at old prices, but no sales are reported at the advances. The leading local rivet manufacturer is now asking an advance from $2 to $3 per ton for small lots of rivets, but is still quotnig the regular price of $2.10 for structural and $2.20 for boiler rivets for round lots. The demand shows an improvement. Orders include a 100-ton lot from a boiler shop. New bolt and nut prices are found on page 1107.

**Old Material.**—Weakness has developed in the scrap market owing to the fact that dealers appear somewhat alarmed over the possibility of reduced mill operations because of the coal strike and quotations on several grades have been reduced 25c. per ton. Dealers have, to a large extent, stopped buying scrap and appear very undecided in their feelings as to whether prices are likely to advance or go down. A few days ago, dealers were reported to have paid as high as $11.50 for turnings, but this grade is being offered now at $11 without purchasers. Railroad malleable scrap has advanced as a result of the increased activity in malleable foundries. A sale of this scrap to a local foundry is reported at $15.50, delivered.

We quote per gross ton, f.o.b. Cleveland, as follows:

| | |
|---|---|
| Heavy melting steel | $13.50 to $14.00 |
| Steel rails, under 3 ft | 14.00 to 14.25 |
| Steel rails, rerolling | 15.00 to 15.50 |
| Iron rails | 14.00 to 15.00 |
| Iron car axles | 18.00 to 19.00 |
| Low phosphorus melting | 14.75 to 15.00 |
| Cast borings | 10.50 to 10.75 |
| Machine shop turnings | 10.50 to 10.75 |
| Mixed borings and short turnings | 10.50 to 10.75 |
| Compressed steel | 11.25 to 11.75 |
| Railroad wrought | 14.00 to 14.50 |
| Railroad malleable | 14.50 to 15.00 |
| Light bundled sheet stampings | 9.00 to 10.00 |
| Steel axle turnings | 11.50 to 11.75 |
| No. 1 cast | 15.50 to 16.50 |
| No. 1 busheling | 10.00 to 10.50 |
| Drop forge flashings over 10 in | 10.75 to 11.00 |
| Drop forge flashings under 10 in | 11.00 to 11.25 |
| Railroad grate bars | 13.25 to 13.50 |
| Stove plate | 13.50 to 13.75 |
| Pipes and flues | 11.00 to 11.50 |

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**The Lemoyne Steel Co., Pittsburgh, with a plant at New Eagle, Pa., resumed work April 17, after a shutdown of several months. About 60 per cent of the former force has been employed.**

# Boston

BOSTON, April 18.

**Pig Iron.**—Buying in this territory continued active the past week, aggregate sales amounting to better than 16,000 tons, and bringing the total business placed the past fortnight up to something like 35,000 or 36,000 tons. No large individual tonnages are involved, transactions ranging from 800 tons down to car lots. Business therefore was spread over a large number of foundries that took iron, believing prices will be higher, and not because of any urgent need of it. Buffalo and eastern Pennsylvania furnaces, previously reported out of the market, accepted additional tonnages, generally at higher prices. Resale Buffalo and eastern Pennsylvania iron figured in transactions, and central Pennsylvania furnaces booked considerable business. Practically all eastern Pennsylvania furnaces, as well as Buffalo, are out of the market to-day, little Alabama is to be had, and Virginia has not been available for more than a fortnight. Where any brand of iron is available, sales representatives have to submit prices to furnaces for confirmation. Sales the past week include eastern Pennsylvania on a basis of $20.50, $21 and $21.50 for No. 2X, contrasted with recent sales of $19, and Buffalo at $20.50 to $22.50 for the same silicon, as against $17.75 within 15 days. Small lots of resale Buffalo, silicon 2.50 to 3, sold at $23. Alabama sold at $16 furnace base. Prices to-day are still higher and show a wider range than heretofore, but really are nominal due to furnaces being out of the market.

We quote delivered at common New England points as follows, having added to furnace prices $4.06 freight from eastern Pennsylvania, $5.46 from Buffalo, $6.58 from Virginia and $10.66 from Alabama:

| | |
|---|---|
| East. Penn., sil. 2.25 to 2.75 | $25.56 to $27.06 |
| East. Penn., sil. 1.75 to 2.25 | 25.06 to 26.56 |
| Buffalo, sil. 2.25 to 2.75 | 25.96 to 27.96 |
| Buffalo, sil. 1.75 to 2.25 | 25.46 to 27.46 |
| Alabama, sil. 2.25 to 2.75 | 27.16 to 27.66 |
| Alabama, sil. 1.75 to 2.25 | 26.66 to 27.16 |
| Virginia, sil. 2.25 to 2.75 | 29.58 |
| Virginia, sil. 1.75 to 2.25 | 29.08 |

**Finished Iron and Steel.**—Local mill representatives quote bars at $1.60 per 100 lb. Pittsburgh, as against $1.50 heretofore. In several instances they cannot accept orders until tonnage and price are confirmed by the home office. Few are actively soliciting business. Other mill products have advanced proportionately. The Boston & Maine Railroad Co. has bought 11,000 tons of heavy rails from the Lackawanna Steel Co., and 2900 kegs of spikes from Dilworth, Porter & Co., Pittsburgh, but has not covered its angle bar requirements. The New England Structural Co. is awarded 1000 tons of structural steel for a Boston theater, the Boston Bridge Works 350 tons for a new Congregational House, Boston, and the Boston Structural Steel Co., Cambridge, Mass., 400 tons for four fabricating jobs. Fabricating prices continue unsettled. The Worcester Wire Works, Inc., Ludlow Street, Jamesville, Mass., carbon steel wire, is operating full with a day and a night shift.

**Warehouse Business.**—Local warehouse prices on sheets have been advanced 15c. per 100 lb., otherwise lists remain as heretofore. The demand for sheets and structural steel continues the outstanding feature of the warehouse market, but that for bars and other mill products has materially increased, and jobbers are beginning to report broken stocks on some sizes. Indications are that wire nails will be advanced within the near future.

Jobbers quote: Soft steel bars, $2.40½ per 100 lb. base; flats, $3.05½; concrete bars, $2.20 to $2.68; structural steel, $2.40½ to $2.50½; tire steel, $3.85 to $4.25; open-hearth spring steel, $4 to $5.50; crucible spring steel, $11.50; steel bands, $2.90½ to $3.53; hoop steel, $3.31½; cold rolled steel, $3 to $3.50; refined iron, $2.40½; best refined iron, $4.25; Wayne iron, $5.50; Norway iron, $5.50; plates, $2.65½ to $2.83; No. 10 blue annealed sheets, $3.63 per 100 lb. base; No. 28 black sheets, $4.65; No. 28 galvanized sheets, $5.65.

**Cast Iron Pipe.**—More activity is noted in cast iron pipe in this territory. The Warren Foundry & Machine Co. has closed on 1900 tons of 6-in. to 12-in. pipe and fittings for the department of mental diseases, State of Massachusetts; 300 tons 6-in. to 12-in. for the town of Brookline, Mass.; 400 tons 20-in. for the city of Fitchburgh, Mass.; 800 tons additional 16-in. for the city of Portland, Me.; 115 tons 8-in. for the town of Bedford, Mass.; and 30,000 ft. 6-in. and 5000 ft. 8-in. for Waterbury, Conn. Other bookings include 350 tons 20-in. for the city of Brockton, Mass., and 6000 ft. 16-in. for the town of Adams, Mass., by the United States Cast Iron Pipe & Foundry Co., and 350 tons 16-in. to 18-in. for West Springfield, Mass., by the Donaldson Iron Co. No gas pipe tonnages of importance have been placed in this territory of late, such business not being attractive to the foundries. Prices on cast iron pipe, due to the volume of going business and to the strength of the pig iron markets, are stronger than they have been before in many months, but are not quotably higher.

**Coke.**—With few exceptions, New England pig iron melters have sufficient by-product foundry coke in stock to fill all requirements up to July 1, based on the present ratio of daily melt. In addition, most of the large coke consumers have contracted for their last half requirements on a basis of prices ruling date of shipment. The foundry coke market, therefore, is less active, but because of conditions in the Connellsville district, prices are reported as very firm. Manufacturers in this territory are placing contracts for castings a little more freely and an increase in the daily foundry melt of the average foundry is expected before the close of April. If bookings should continue to increase, there subsequently will be a reflection in the foundry coke market during May. New England producers of by-product foundry coke are receiving inquiries from New York State and from New Jersey, but no important tonnages have been placed.

**Old Material.**—A firmer feeling in machinery cast is noted, prices having stiffened all of 50c. on ordinary grades and considerably more on strictly textile scrap. Sales of ordinary machinery cast are reported in car lots at $18.50 to $19 delivered and of textile machinery at $20. The aggregate tonnage placed the past week, however, was unimportant, foundries being slow in closing contracts. Probably the largest sale of No. 1 machinery cast for the week was 100 tons to the Gurney Heater Co., Framingham, Mass., at $18.50 delivered. Foundries are offering $14 delivered for stove plate, but few holders are willing to sell at that price. More or less heavy melting steel, borings and turnings are moving out of New England into Pennsylvania, but there has been a perceptible slowing up in business due to the uncertainty among mills as a result of the coal strike.

The following prices are for gross ton lots delivered consuming points:

| | |
|---|---|
| No. 1 machinery | $18.00 to $18.50 |
| No. 2 machinery | 16.00 to 16.50 |
| Stove plate | 14.50 to 15.00 |
| Railroad malleable | 13.00 to 13.50 |
| Car wheels | 17.00 to 17.50 |

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

| | |
|---|---|
| No. 1 heavy melting steel | 10.00 to 10.50 |
| No. 1 railroad wrought | 11.00 to 12.00 |
| No. 1 yard wrought | 10.00 to 10.50 |
| Wrought pipe (1 in. in diam., over 2 ft. long) | 8.00 to 8.50 |
| Machine shop turnings | 6.00 to 6.50 |
| Cast iron borings, rolling mill | 6.50 to 7.00 |
| Cast iron borings, chemical | 9.50 to 10.00 |
| Blast furnace borings and turnings | 6.00 to 6.50 |
| Forged scrap and bundled skeleton | 5.50 to 6.00 |
| Street car axles and shafting | 12.50 to 13.00 |
| Rerolling rails | 10.50 to 11.00 |

# Buffalo

BUFFALO, April 18.

**Pig Iron.**—For the first time in many months Buffalo furnaces are virtually able to fix their own prices on pig iron. Sales of diversified tonnages in the week which closed Saturday brought prices ranging from $20 base to $22. The selling line-up remains the same as last reported in THE IRON AGE, three furnaces being out of the market. One of the remaining two has more than 50,000 tons piled and with the advent of $22 and $23 iron and the likely prospect that it will go higher, it is assumed this interest will do considerable business. As far as the strike having an immediate effect on operations, all the producers here will be able to stay in blast until at least the end of the second quarter. Several odd lots were sold by one of

the interests which announced its withdrawal last week; $20 being the consideration on No. 2 plain and on a special order for No. 1 X the price was $24. A 1000-ton lot of malleable was sold at $21. Three carload lots of No. 2 plain were sold by one furnace at $22 and the same seller promises to quote $24 on the same grade on any new inquiry.

We quote f.o.b. per gross ton Buffalo as follows:

| | |
|---|---|
| No. 1 foundry, 2.75 to 3.25 sil. | $23.00 |
| No. 2X foundry, 2.25 to 2.75 sil. | 22.50 |
| No. 2 plain, 1.75 to 2.25 sil. | 22.00 |
| Basic | 20.00 |
| Malleable | 21.00 |
| Lake Superior charcoal | 26.14 |

**Finished Iron and Steel.**—Virtually all selling agencies are in position to select their own business and the buying movement is unabated. Some desirable business has been booked and although 1.50c. is the usual quotation on bars, shapes and plates, there is a close scrutiny of the specifications before sellers book the order. Sheet demand has fallen off to a degree with the leading sheet interest, but this has been expected in view of the extraordinary bookings previous to the advance in prices. The Buffalo branch of a leading independent is still out of the selling field. An inquiry for 5000 tons of plates and shapes did not bring a quotation from a Buffalo seller. Tin plate and pipe demand is exceptionally strong and in the first named the canning industry has booked for fall requirements on a large scale. Some weakness is reported in reinforcing bar prices and a large tonnage for the Rochester subway job is said to have been taken by a Buffalo seller. The coal situation has not affected operations with reference to curtailment, but a free movement of coal would likely mean a big increase in the operating programs of a number of interests. Wire demand is especially brisk and the leading maker is close to normal operation.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.50c.; plates, 2.50c.; soft steel bars and shapes, 2.40c.; hoops, 3.15c.; bands, 3c.; blue annealed sheets, No. 10, 3.55c.; galvanized steel sheets, No. 28, 5.40c.; black sheets, No. 28, 4.25c.; cold-rolled strip steel, 5.65c.; cold-rolled round shafting, 3.20c.

**Old Material.**—Quietness in the market is attributed to the coal situation and only one large consumer of heavy melting steel is in the market. This buyer has contracted for some unusually large tonnages and the most recent purchase was one of 5000 tons at $14.50. Outside the district, there is a strong demand for turnings and borings. Machinery cast scrap has been active here, but little of this material is available. Generally production is getting nearer demand.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

| | |
|---|---|
| Heavy melting steel | $14.50 to $15.00 |
| Low phos., 0.04 and under | 17.50 to 18.50 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| Car wheels | 16.00 to 16.50 |
| Machine shop turnings | 9.50 to 10.00 |
| Cast iron borings | 10.50 to 11.50 |
| Heavy axle turnings | 12.50 to 13.00 |
| Grate bars | 12.00 to 13.00 |
| No. 1 busheling | 12.00 to 12.50 |
| Stove plate | 14.00 to 15.00 |
| Bundled sheet stampings | 9.00 to 10.00 |
| No. 1 machinery cast | 17.00 to 17.50 |
| Hydraulic compressed | 12.00 to 12.50 |
| Railroad malleable | 13.00 to 14.00 |

## Cincinnati

CINCINNATI, April 17, 1922.

**Pig Iron.**—Effects of the coal strike are being seen in rapidly advancing prices of Northern irons. Southern Ohio furnaces have advanced $2 per ton during the week, to-day's quotations being $21 furnace on No. 1 foundry and Bessemer, with $20.50 asked for basic. Several 100-ton sales have already been made at these prices, and it is not without the bounds of possibility that further advance will be made before the week ends. Lake furnaces apparently are firming up, and one furnace which has been low seller for some months has now definitely announced a $21 base. The Southern market can now be definitely quoted at $16 to $16.50, the last furnace quoting under these figures having announced a $16, Birmingham, base to-day. There is very little iron available in the South for second quarter shipment and while little of it is coming into this district, the consumption in the South is heavy. Some Southern business has been booked for third quarter at $16.50, but furnaces are going slow about committing themselves that far ahead. In the Cincinnati district, the market has been rather quiet, advancing prices having apparently driven buyers out of the market until they could size up the situation more clearly. An Indiana melter bought 1,000 tons of malleable and a central Ohio melter 500 tons of malleable, both on a $19, furnace, base. A Louisville car wheel manufacturer bought 200 tons of charcoal iron, and 100 tons of foundry, while a local melter took 600 tons of Southern at $16, Birmingham. Other sales ranged from carloads to 250 tons. A notable sale was one of 500 tons of Southern foundry to a Pennsylvania melter at $16 base. The demand for silveries continues fair, and a price advance of $1 a ton was made during the week. Reports are current that large tonnages of basic have been sold at prices ranging as high as $23, Valley furnace, but authentic information is lacking. Inquiries are still rather scarce, the largest being for 1,300 tons of foundry, and 900 tons of foundry from Cincinnati district melters.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

| | |
|---|---|
| Southern coke, sil. 1.75 to 2.25 (base) | $20.50 to $21.00 |
| Southern coke, sil. 2.25 to 2.75 (No. 2 soft) | 21.00 to 21.50 |
| Ohio silvery, 8 per cent sil. | 31.02 |
| Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) | 23.52 |
| Basic Northern | 23.02 |
| Malleable | 23.52 |

**Finished Material.**—A number of steel companies are reported to have raised prices on bars and shapes to 1.60c. base, Pittsburgh. This quotation has been made by at least one large independent. While some orders have been placed for 100-ton lots, most of the business is confined to carload lots for immediate delivery. In the sheet market, however, reports are very optimistic. Some mills are reported to be sold up for second quarter on automobile body sheets, and to have little capacity left on regular lines. Prices are very firm, and rumors are current that a $2 per ton advance will be made shortly on both sheets and plates. Reinforcing bars are in fair demand, with the price firmly pegged at 1.50c. Pittsburgh. The Big Four Railroad opened bids on its second quarter requirements of steel and bolts and nuts during the week. On bars, shapes and plates the general quotation was 1.50c. Pittsburgh. This road is now inquiring for 4500 kegs of track bolts, 7000 kegs of track spikes, 30,000 pairs of angle bars, and 198,000 tie plates. On wire and wire products, orders are steadily improving. Nails are still being quoted at $2.40 per keg, base, Pittsburgh, although several mills have advanced to $2.50. In the structural field, the only new inquiry of consequence is for the Washington Gladden school at Columbus, Ohio, involving 1000 tons. An auditorium at Chattanooga, Tenn., is being figured, and bids will be taken till May 1 on an 11-story addition to the Provident Savings Bank & Trust Co., Cincinnati. A high school building for Cincinnati is also up. A number of projects involving considerable tonnages of bars have been placed, the Ferro-Concrete Construction Co., Cincinnati, having taken an automobile hotel building for the Cincinnati Automobile Club, and will also erect a 7-story office building for the Southern Railroad.

**Warehouse Business.**—Local jobbers report business as much improved. Orders for immediate delivery are increasing steadily, a notable example being one for 100 tons of angles recently placed by a railroad company. Jobbers in wire products also report a better demand for seasonable goods. An advance of 10c. a keg in wire nails has been made by some jobbers, and it is expected that it will be general within a week. On other lines, prices are very firm, and it would not be surprising if advances were also made.

Iron and steel bars, 2.60c. base; hoops and bands, 3.20c. base; shapes and plates, 2.70c. base; reinforcing bars, 2.67½c. base; cold rolled rounds, 3.35c. base; flats, squares and hexagons, 3.85c. base; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; common wire nails, $2.75 per keg base; No. 9 annealed wire, $2.60 per 100 lb.

**Plant Operations.**—The Whitaker-Glessner Co. at Portsmouth is now running nine open-hearth furnaces, and more mills are in operation than for many months.

At other plants operations are on the same scale as last week. No interference with schedule has yet been felt by reason of the coal strike, and none is expected, as fuel supplies generally are secured from non-union mines in Kentucky and West Virginia.

**Tool Steel.**—Considering business conditions generally, the tool steel market is showing a fair amount of activity. Orders are small and for immediate delivery. Prices show little change, and 18 per cent tungsten high speed steel is now generally quoted at 75c. to 80c. per lb.

**Coke.**—The demand for foundry coke is again showing life, and the market is stiffening as a consequence. Connellsville furnace coke has been quoted at $5.50, and foundry at $5 to $5.50. Some New River coke is available at $7 to $7.50, and Wise County at $5 to $5.50. Some West Virginia operators have withdrawn from the market for the time being. Advancing prices are looked upon as a certainty.

**Old Material.**—Interference with operations in Valley and Pittsburgh district steel plants has resulted in dealers receiving orders to suspend shipments of scrap for the time being. St. Louis and Chicago markets, however, are showing increasing activity, and tonnages are moving in those directions. The local market remains quiet. Dealers are actively bidding for materials, and as a result prices are still firm at the recent levels.

We quote dealers' buying prices, f.o.b. cars:

| | | |
|---|---|---|
| *Per Gross Ton* | | |
| Bundled sheets | $6.00 to | $6.50 |
| Iron rails | 13.00 to | 13.50 |
| Relaying rails, 50 lb. and up | 26.00 to | 26.50 |
| Rerolling steel rails | 11.50 to | 12.00 |
| Heavy melting steel | 11.00 to | 11.50 |
| Steel rails for melting | 11.00 to | 11.50 |
| Car wheels | 13.50 to | 14.00 |
| *Per Net Ton* | | |
| No. 1 railroad wrought | 10.50 to | 11.00 |
| Cast borings | 5.50 to | 6.00 |
| Steel turnings | 4.00 to | 4.50 |
| Railroad cast | 13.50 to | 14.00 |
| No. 1 machinery | 15.50 to | 16.00 |
| Burnt scrap | 9.00 to | 9.50 |
| Iron axles | 17.50 to | 18.00 |
| Locomotive tires (smooth inside) | 10.50 to | 11.00 |
| Pipes and flues | 5.00 to | 5.50 |

# Birmingham

BIRMINGHAM, ALA., April 17.

**Pig Iron.**—At the close of the first half of the month, Birmingham iron was close to $16.50 minimum. The maker most conservative in advancing prices marked up to $16 on April 12 after selling 15,000 tons of basic iron to a Middle Western consumer at $15.50, the equivalent of a $16.50 foundry base. This maker is sold to capacity on foundry for the remainder of the second quarter. Another large maker toward the close of the week booked 3000 tons for Mid-Western delivery at $16.50. Four makers were on that base at the close of the week, three of them absolutely so for all tonnages and the other for all except very large business. The Sloss-Sheffield Steel & Iron Co.'s No. 3 stack at North Birmingham blew in this week. The Republic Iron & Steel Co. and Woodward Iron Co. are expected to have another stack in around May 1, but no announcement has been made. Demand toward the close of week was as strong as ever and requests for third quarter became more numerous, but business was not accepted except by one maker, who booked about 10,000 tons on the $15.50 base. No iron has yet gotten into the East outside of small lots. Sales of small tonnages at $16.50 have been made both in the South and in Mid-West over a wide territory, Toledo, Louisville, Cincinnati and Michigan points being included. The Sloss-Sheffield Steel & Iron Co. has its up river iron moving well and bookings are steady. One belated pipe maker closed this week on 4000 tons of pig iron at $16. Car service is all that could be desired and small yard stocks are dwindling still further. The maker who had the largest stocks has made bookings that will more than care for them and increase furnace operations. The situation seems to grow stronger every day. We quote per gross ton f.o.b. Birmingham district furnaces as follows:

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

| | |
|---|---|
| Foundry, silicon 1.75 to 2.25 | $16.00 to $16.50 |
| Basic | 15.00 to 15.50 |
| Charcoal, warm blast | 30.00 |

**Finishing Mills.**—The Tennessee company is still on a 100 per cent basis at steel producing works in Enscley with other mills as per the past several weeks. Confirmation of an order for 1000 gondolas for the Louisville & Nashville taken by the Chickasaw Shipbuilding & Car Co. has been given. The steamship Tuscaloosa is putting in at Mobile for 5000 to 6000 tons of rails from Ensley mills to Japan. South America and China were heard from in steel hoop circles during the week. Wire mills report about 60 to 70 per cent of operations, with steady demand for a variety of products. The Pacific Coast is taking wire mill products regularly by vessel out of Mobile.

**Cast Iron Pipe.**—The advance of high pressure pipe to the base of $34.50 from $33 holds firmly. Mid-Western orders are coming in a stream. The sanitary pipe base of $40 is now maintained. As much as 1000 tons offered at $37, the old base, was turned down last week. Some shops have bookings equal to 30 to 40 days of capacity. The steamer Red Hook left Mobile at the end of the week with 4500 tons of high pressure and sanitary pipe, wire mill products and pig iron for the Pacific Coast. The pipe tonnage was about 3000 tons.

**Coal and Coke.**—Coal production has remained at normal of 325,000 tons a week without a riffle in the mining field. Coke is very active at $5 and $5.25.

**Old Material.**—Steel scrap has at last shown some life and advanced $1. Other adjustments are about to take place. Cast scrap is due for a rise very soon on strong demand and limited stocks.

We quote per gross ton f.o.b. Birmingham district yards as follows:

| | |
|---|---|
| Steel rails | $13.00 to $14.00 |
| No. 1 steel | 12.00 to 13.00 |
| No. 1 cast | 14.00 to 15.00 |
| Car wheels | 13.00 to 14.00 |
| Tramcar wheels | 12.00 to 13.00 |
| No. 1 wrought | 11.00 to 12.00 |
| Stove plate | 13.00 to 14.00 |
| Cast iron borings | 6.00 to 7.00 |
| Machine shop turnings | 4.00 to 5.00 |

# St. Louis

ST. LOUIS, April 18.

**Pig Iron.**—The market for pig iron continues strong, and while no orders for any considerable tonnage was placed during the week, the volume of sales in from 100 to 300-ton lots was fairly large. Sales of the Granite City producer were around 900 tons. The market for Northern iron is firm at $20, Chicago, with an advancing tendency, the market for Southern iron is at $16 to $16.50, Birmingham, the only maker quoting the lower price being a Sheffield concern whose sales are made at figures for either all-rail or water and rail shipment. This concern's sales for the week in this territory fell off, with the water and rail movement a favorite. The sale of 300 tons of charcoal iron in the district is reported. Inquiries for 5000 tons of basic for fourth quarter delivery and for 2000 tons of basic for steel makers in this district reported in THE IRON AGE last week are still pending. There is an inquiry out for 2500 to 3000 tons of foundry iron for second quarter shipment to Kansas City and Council Bluffs, and an inquiry for 2000 tons of foundry iron for Western shipment. An Alton, Ill., consumer wants 500 to 600 tons.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.80 freight from Chicago and $5.74 from Birmingham:

| | |
|---|---|
| Northern foundry, sil. 1.75 to 2.25 | $22.80 |
| Northern malleable, sil. 1.75 to 2.25 | 22.80 |
| Basic | 22.80 |
| Southern foundry, all rail, sil. 1.75 to 2.25 | $21.74 to 22.20 |
| Southern foundry, water and rail, sil. 1.75 to 2.25, f.o.b. St. Louis | 20.24 |

**Ferroalloys.**—Sales of ferroalloys were larger during the last week than for any week in more than a year. The sales for the week included 300 tons Bessemer ferrosilicon, 150 tons ferromanganese, two sales each of 200 tons of spiegeleisen and 200 tons of ferrosilicon. An inquiry is pending for 300 tons of spiegeleisen.

**Finished Iron and Steel.**—Railroad inquiries continue to form the center of interest in the iron and steel trade. The Missouri, Kansas & Texas Railroad is in the market for 2000 steel underframe, steel superstructure automobile cars. The Missouri Pacific is expected to place an order this week for 164,000 angle bars, and this road is also in the market for 500 kegs of track bolts. The St. Louis & San Francisco Railroad wants six 60-foot steel chair cars. One thousand of the steel hopper cars bought by the Louisville & Nashville went to the Cambria Steel Co. and 500 to the Chickasha Ship Building Corporation, Birmingham. The biggest item in structural steel that has been developed locally in some time is the first unit of the power plant to be erected on the east side of the Mississippi River by the Union Electric Light & Power Co., the unit involving 2500 tons of structural steel, the contract for which is expected to be placed this week. Requests for bids have been received here for the Federal Reserve Bank Building, New Orleans, involving 900 tons of structural steel. The order for the 450 tons of structural steel for the Majestic Theater at Houston, Tex., was placed with the Virginia Bridge & Iron Co., Roanoke, Va. The demand for stock out of warehouse is steadily improving, and if the coal strike should interfere with operations in steel mills further, a still greater demand is expected.

For stock out of warehouse we quote: Soft steel bars, 2.37½c. per lb.; iron bars, 2.37½c.; structural shapes, 2.47½c.; tank plates, 2.47½c.; No. 10 blue annealed sheets, 3.47½c.; No. 28 black sheets, cold rolled, one pass, 4.15c.; cold drawn rounds, shafting and screw stock, 3.25c.; structural rivets, $3.09½ per 100 lb.; boiler rivets, $3.19½; tank rivets, 7/16-in. and smaller, 65 and 5 per cent off list; machine bolts, large, 60-10 per cent; small, 60, 10 and 10 per cent; carriage bolts, large, 55-5 per cent; small, 60 and 10 per cent; lag screws, 65-5 per cent; hot pressed nuts, square or hexagon blank, $4; and tapped, $3.75 off list.

**Coke.**—The demand for coke is only fair, but is expected to develop in the way of orders as the coal strike progresses. The best brands of Connellsville foundry coke are now selling at $5.25. The demand for domestic coke is falling off.

**Old Material.**—The market for old material continues to advance. Dealers seem to be more excited about the situation than any other element in the trade, however, and they are paying from 50c. to $1 a ton more to railroads than the consumers are paying for the material. In some instances dealers are short on items sold to consumers, and are placing their requirements at a loss. The Laclede Steel Co. bought 2500 tons of re-rolling rails, which will put them out of the market for some time. The Commonwealth Steel Co. bought a large tonnage of melting scrap. Railroad lists before the market this week include Northern Pacific Railway, 3000 tons; Wabash, 2500 tons and Chicago, Rock Island & Pacific, 3800 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

*Per Gross Ton*

| | |
|---|---|
| Old iron rails | $16.50 to $17.00 |
| Steel rails, rerolling | 14.50 to 15.00 |
| Steel rails, less than 3 ft. | 13.50 to 14.00 |
| Relaying rails, standard section | 25.00 to 30.00 |
| Cast iron car wheels | 16.00 to 16.50 |
| No. 1 railroad heavy melting steel | 13.00 to 13.50 |
| No. 1 heavy shoveling steel | 12.25 to 12.75 |
| Frogs, switches and guards, cut apart | 13.00 to 13.50 |

*Per Net Ton*

| | |
|---|---|
| Heavy axle and tire turnings | $8.50 to $9.00 |
| Steel angle bars | 12.00 to 12.50 |
| Iron car axles | 21.00 to 21.50 |
| Steel car axles | 15.25 to 15.75 |
| Wrought iron arch bars and transoms | 17.00 to 17.50 |
| No. 1 railroad wrought | 11.00 to 11.50 |
| No. 2 railroad wrought | 11.25 to 11.75 |
| Railroad springs | 13.50 to 14.00 |
| Steel couplers and knuckles | 13.50 to 14.00 |
| Cast iron borings | 8.00 to 8.50 |
| No. 1 busheling | 10.00 to 10.50 |
| No. 1 boilers cut in sheets and rings | 8.50 to 9.00 |
| No. 1 railroad cast | 15.25 to 15.75 |
| Stove plate and light cast | 13.00 to 13.50 |
| Railroad malleable | 11.50 to 12.00 |
| Pipe and flues | 8.00 to 8.50 |
| Machine shop turnings | 6.50 to 7.00 |

# San Francisco

SAN FRANCISCO, April 12.

**Pig Iron.**—There has been a fair volume of business in pig iron during the past two weeks, though the trading is not altogether indicative of a materially revived consumption on the Coast. Around 1700 tons have been placed for discharge at various points along the Coast, notably Los Angeles, San Francisco and Seattle. This was entirely domestic material, which is the only offering attracting any attention at present, due to the wide differential between the price of domestic and foreign pig iron. There are a few inquiries for limited amounts of Southern iron in the market, the principal of which is that by the Southern Pacific Co. for 500 tons of No. 1, 2.25 to 2.75 silicon, and 300 tons of No. 2, 1.75 to 2.25 silicon. Ideas of the price of domestic material vary, some running as high as $28.50 ex-ship, for No. 1 quality, while others are as low as $24, at around which figure some business was transacted. Foreign pig iron, on the other hand, is offered at prices around $30 for fair-sized quantity lots, while small orders bring out higher figures. But owing to the lack of actual trading it is difficult to estimate the market accurately. Moreover, foreign makers are unwilling to quote over any length of time. Foundry activities are still restricted to routine, hand-to-mouth business.

**Finished Iron and Steel.**—Market conditions on the Coast have developed a better tone, both in regard to prices and prospects. While no great activity can be claimed for the market, it presents signs of recovery and stability not disclosed earlier in the year. Practically every form of steel product shows the general betterment. Prices of plates, sheets and bars are distinctly firmer. Galvanized sheets are now around 4.15c., tidewater, blue annealed approximate 2.40c. and black sheets are being held for about 2.15c. Plates have been advanced on two or three occasions, bars indicate a higher market than has prevailed for two or more months, the present level being no less than 2.40c. or even higher, while some are trying to maintain 2.55c. Among the current projects is that of the Hetch Hetchy Water Supply, which requires four 20,000 kva. generators (about 290 tons each), four 25,000 hp, impulse water wheels, and eight 36-in. gate valves, all with auxiliaries, for its Moccasin Creek power plant. Bids were received to-day. Steel interests are figuring on the Masonic Home at Decoto, Cal., which will take about 600 tons of standard and Bethlehem material. The new Horace Mann school of San Francisco will require several hundred tons of material, the estimates not being out yet. On the Government hospital at Palo Alto, for which about 500 tons of reinforcing material will be needed, the award has not yet been made. Other prospects include a concrete structure for the Salvation Army in San Francisco and a high school for San Mateo. The Pacific Coast Steel Co. was awarded the contract for the Steinhart aquarium, comprising 130 tons, for this city. Llwellyn Iron Works received the contract to supply something over 5000 tons of structural steel and 500 tons of reinforcing steel for the proposed Hotel Biltmore, Los Angeles. Just recently a small shipment of foreign bars and other lines, 27 tons, arrived here, the first delivery of orders placed in August, 1921. German and Belgium bars and nails were in poor condition, wire rods being sent for bar lengths, and the bars being faulty, but rails and bolts are perfect. Another shipment of about 50 tons is expected soon. As far as can be ascertained, no new business of this nature has been placed for several months, as the foreign market is too high, (with the import duty) deliveries are too slow, and the long water haul tends to damage the goods in transit.

**Cast Iron Pipe.**—The market has gained momentum lately and now is in a rather strong condition. Prices are higher, following firmness in the foundry situation and in steamer rates. Both private and municipal business is good, it being reported that between 3000 and 4000 tons of material has been placed for private accounts during the past fortnight. The market is un-

steady at between $49 and $50, delivered. Prospects include a pipe line job in Portland, Ore., necessitating around 11,000 tons, and one in Astoria, requiring about 1000 tons of No. 10. The city of Sacramento is in the market for 5000 feet of 4 and 6-in. pipe, and Los Angeles will close bids on April 14 for 1840 tons of 4 and 6-in. pipe. A plumbers' strike in San Francisco is having a deterrent influence, which, however, is not serious.

**Coke.**—A steady, if rather narrow, consumption of coke continues, which means a limited demand. This is accentuated by the liberal holdings of foreign coke which have arrived recently. Some inquiry for immediate shipment of some quantities of domestic material, in 8 to 10-car lots; and a few orders have been placed for shipment during June and July, perhaps 300 tons in all. The coal strike is exerting a firming tendency on prices, the market on imported, in small lots, being around $20, ex-ship; and on domestic, close to $8.50, f.o.b. ovens.

**Old Material.**—This market lacks any very notable features other than the usual steady demand from consumers. Two or three sales involving something around 1000 tons each were reported. Prices remain close to those ruling two or three weeks ago, heavy melting being about $9.50 a gross ton delivered at consumers' mills, and cast iron scrap appearing easy and quiet at slightly over $20 to $22.

## STEEL CORPORATION MEETING

### Chairman Gary Gives His Views on Labor Questions and Business Conditions

At the annual meeting of the stockholders of the United States Steel Corporation held at Hoboken, N. J., April 17, Judge Gary presided and spoke informally in regard to business conditions and other subjects. He referred with deep feeling to the death of Thomas Murray, long an official of the company, and to the illness of Richard Trimble, secretary and treasurer, who has been incapacitated for more than a year. The employees, he said, through the war and after, have been in the main loyal, faithful and efficient. The company has tried to treat them as they deserved and the policy would be to pay as high wages and treat the employees in every respect at least as well as any other employees in similar lines of service are treated. As to business conditions, he said the Steel Corporation is operating at 75 per cent of its ingot capacity. As to the coal strike, Judge Gary said that he did not know why the men had discontinued work. Coal operations of the corporation in the Birmingham, Pocahontas and Kentucky districts are continuing in full, and in the Connellsville district 117,000 tons of coal per week and about 54 per cent of usual coke output are being received.

#### The 12-Hour Day

Referring to the 12-hr. day question, Judge Gary said it would always be a difficult one. In the early part of 1921 the corporation had entirely eliminated the 7-hr. week and the long turn service which occurred at the time shifts were made, and it had reduced materially the 12-hr. day service from the war practices. Between October, 1920, and March, 1922, it had reduced the 12-hr. men from 32 per cent of the employees to 14 per cent. He said the corporation would like to eliminate all the 12-hr. day work, if possible and practicable, but it had met the opposition of the men themselves, as they asked to work longer hours in order to make larger compensation, and it would not be practicable for one employer to inaugurate a shorter hour system unless a similar system should be adopted by all employers in the same industry, for if one employer acted alone he would lose workmen who would go to the other plants where more money could be earned. He declared that the competitors of the Steel Corporation believed in the 12-hr. day and although they more than once had been requested to express an opinion, they had not, so far as he knew, yielded to the desire of the lecturers and some publishers, well-intentioned men, to reduce the hours contrary to the wishes of the men. He said that the corporation expected to meet competition and had no feeling of hostility toward competitors or anyone else. It would do its duty as it saw it.

#### Loss of Employees

In reply to a question from a stockholder as to what extent the reduction in hours from 32 per cent to 14 per cent had resulted in the loss of men to other companies, Judge Gary said that there was no way of telling exactly how many had gone. It was known, however, by practical demonstration and by what the men themselves said that they did go from plants of shorter hours to those of longer hours. Asked whether the corporation in reducing hours was doing so largely to satisfy public sentiment, Judge Gary said that he would say frankly that he was certain that in many if not in most of the cases it is a hardship rather than a benefit to the workman to refuse to allow him to work 12 hours a day when the work is not laborious and not injurious to him, and when he desires to work longer and earn more money. He added that many of the highest officials of the corporation and of the subsidiary companies worked 12 hours a day or more, and are not harmed by it. So far as he was informed, the general public was perfectly willing to have the officers work as many hours a day as they pleased.

#### Export Business

Judge Gary said the export business of the corporation is increasing and has been increasing for some time, getting back to what it was before the war. He believed it was going back to where it was at the highest point, and also said that there was reason to believe that domestic business would also increase.

George F. Baker, James A. Farrell, Elbert H. Gary and J. P. Morgan were re-elected directors for three years. George F. Baker, Jr., was elected a director to succeed Daniel G. Reid, resigned, on account of ill health, and E. J. Buffington was elected a director to succeed Thomas Murray, deceased.

Judge Gary received a rising vote of thanks from the stockholders.

## British Foundrymen in United States

Five prominent British foundrymen and engineers arrived in New York, April 18, on the Scythia from Liverpool. The party includes Oliver Stubbs, managing director Joseph Stubbs, Ltd., Manchester, manufacturer of textile machinery and general iron castings, and president of the Institution of British Foundrymen; Thomas H. Firth, managing director Brightside Foundry & Engineering Co., Ltd., Sheffield, and a past president of the Institution of British Foundrymen; Sir Henry Hollingdrake, who is interested in the automotive industry and chairman of Henry Hollingdrake & Son, Stockport, engineers and iron founders; Osman Shaw and Rupert T. Cooke, directors Francis Shaw & Co., Ltd., Manchester, manufacturers of rubber machinery. Mr. Stubbs and Mr. Firth as president and past president of the Institution of British Foundrymen are guests of the American Foundrymen's Association. The itinerary of about a month includes inspections of foundries and other plants in various cities of the United States and possibly Canada.

The Empire Fuel Co., Dallas, Tex., operating lignite properties near Milano, Tex., has plans nearing completion for the construction of a new carbonization and briquetting plant at Rockdale, Tex., for the manufacture of fuel briquettes, powdered carbon and by-products. The initial unit is estimated to cost in excess of $250,000, with machinery. To provide funds for the expansion, the company has increased its capital from $1,000,000 to $5,000,000, at the same time changing its name to the Empire Fuel Corporation. Adam H. Davidson is chairman of the board, and E. B. Neiswanger, president and general manager.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

## Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

| | | | |
|---|---|---|---|
| Philadelphia, domestic | $0.36 | Kansas City | $0.815 |
| Philadelphia, export | 0.265 | Kansas City (pipe) | 0.77 |
| Baltimore, domestic | 0.35 | St. Paul | 0.665 |
| Baltimore, export | 0.255 | Omaha | 0.815 |
| New York, domestic | 0.38 | Omaha (pipe) | 0.77 |
| New York, export | 0.285 | Denver | 1.35 |
| Boston, domestic | 0.405 | Denver (wire products) | 1.415 |
| Boston, export | 0.285 | Pacific Coast | 1.665 |
| Buffalo | 0.295 | Pacific Coast, ship plates | 1.335 |
| Cleveland | 0.24 | Birmingham | 0.765 |
| Detroit | 0.325 | Memphis | 0.43 |
| Cincinnati | 0.325 | Jacksonville, all rail | 0.555 |
| Indianapolis | 0.345 | Jacksonville, rail and water | 0.46 |
| Chicago | 0.38 | New Orleans | 0.57 |
| St. Louis | 0.475 | | |

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, $1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 1.50c. to 1.60c.

Sheared plates, ¼ in. and heavier, tank quality, 1.50c. to 1.60c.

## Wire Products

Wire nails, $2.40 to $2.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.25 and shorter than 1 in., $1.75; bright Bessemer and basic wire, $2.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, $2.25; galvanized wire, $2.75; galvanized barbed wire, $3.05 to $3.15; galvanized fence staples, $3.05 to $3.15; painted barbed wire, $2.55 to $2.65; polished fence staples, $2.55 to $2.65; cement-coated nails, per count keg, $1.90 to $2; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 70½ per cent off list for carload lots; 69½ per cent for 1000-rod lots, and 68½ per cent for small lots, f.o.b. Pittsburgh.

## Bolts and Nuts

Machine bolts, small, rolled threads, 65, 10, 10 and 5 per cent off list

Machine bolts, small, cut threads, 65, 10 and 5 per cent off list

Machine bolts, larger and longer...65,10 and 5 per cent off list

Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads, 65, 10 and 5 per cent off list
Cut threads ..... 65 and 5 per cent off list
Longer and larger sizes..... 65 and 5 per cent off list

Lag bolts ..... 65, 10 and 10 per cent off list

Plow bolts, Nos. 1, 2 and 3 heads, 60 and 10 to 60 per cent off list
Other style heads..... 20 per cent extra

Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.:
Smaller and shorter..... 65 per cent off list
Larger and longer sizes..... 65 per cent off list

Hot pressed square or hex. blank nuts..... $5.25 off list

Hot pressed nuts, tapped..... $5.25 off list

C.p.c. and t. sq. or hex. nuts, b'ank..... $5.00 off list

C.p.c. and t. sq. or hex. nuts, tapped..... $5.00 off list

Semi-finished hex. nuts:
9/16 in. and smaller, U. S. S....80, 10 and 10 per cent off list
Small sizes, S. A. E., 80 and 3 tens to 80 and 2 tens per cent off list
⅝ in. to 2 in. inclusive, U. S. S..... 80 per cent off list

Stove bolts in packages..... 80, 10, 10 and 5 per cent off list

Stove bolts in bulk..... 80, 10, 10, 5 and 2½ per cent off list

Tire bolts ..... 65, 10 and 5 per cent off list

Track bolts in carloads..... 3c. to 3.50c. base

Track bolts, less than 200 kegs..... 3.50c. to 4c. extra

## Upset Square and Hex. Head Cap Screws

½ in. and under.....80 and 10 to 80, 10 and 10 per cent off list
9/16 in. to ¾ in.....80 and 10 to 80, 10 and 10 per cent off list

*Upset Set Screws*

½ in. and under..... 80, 10 and 5 to 85 per cent off list
9/16 in. to ¾ in..... 80, 10 and 5 to 85 per cent off list

*Milled Square and Hex. Cap Screws*

All sizes ..... 75 and 10 to 80 per cent off list

*Milled Set Screws*

All sizes ..... 70, 10 and 10 per cent off list

## Rivets

Large structural and ship rivets..... $2.10 to $2.25
Large boiler rivets..... 2.20 to 2.35
Small rivets ..... 75 and 10 off list

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $38; chain rods, $38; screw stock rods, $43; rivet and bolt rods and other rods of that character, $38; high carbon rods, $45 to $48, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $2.15 to $2.25 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in. and 7/16-in., $2.50 base; 5/16-in., $2.50 base. Boat and barge spikes, $2.50 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, $3 to $3.50 base per 100 lb. Tie plates, $1.75 per 100 lb. Angle bars, $2.40 per 100 lb.

## Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $9.30 per package; 8-lb. coating, I. C., $9.60; 15-lb. coating, I. C., $11.80; 20-lb. coating, I. C., $13; 25-lb. coating, I. C., $14.25; 30-lb. coating, I. C., $15.25; 35-lb. coating, I. C., $16.25; 40-lb. coating, I. C., $17.25 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars, 1.50c. to 1.60c. from mill. Refined bar iron, 2c. to 2.10c.

## Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

*Butt Weld*

| Steel: Inches | Black | Galv. | Iron: Inches | Black | Galv. |
|---|---|---|---|---|---|
| ⅛ | 54½ | 28 | ¼ to ⅜ | + 3½ | +22½ |
| ¼ to ⅜ | 60 | 33½ | ½ | 36½ | 18½ |
| ½ | 65 | 50½ | ¾ | 42½ | 27½ |
| ¾ | 69 | 56½ | 1 to 1½ | 44½ | 29½ |
| 1 to 3 | 71 | 58½ | | | |

*Lap Weld*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 64 | 51½ | 2 | 39½ | 25½ |
| 2½ to 6 | 68 | 55½ | 2½ to 6 | 42½ | 29½ |
| 7 to 8 | 65 | 51½ | 7 to 12 | 40½ | 27½ |
| 9 to 12 | 64 | 50½ | | | |

*Butt Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ⅛ | 50½ | 33 | ¼ to ⅜ | + 4½ | +37½ |
| ¼ to ⅜ | 56 | 38½ | ½ | 35½ | 23½ |
| ½ | 62 | 50½ | ¾ | 42½ | 28½ |
| ¾ | 67 | 55½ | 1 to 1½ | 44½ | 30½ |
| 1 to 1½ | 69 | 57½ | | | |
| 2 to 3 | 70 | 58½ | | | |

*Lap Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 62 | 50½ | 2 | 40½ | 27½ |
| 2½ to 4 | 66 | 54½ | 2½ to 4 | 43½ | 31½ |
| 4½ to 6 | 65 | 53½ | 4½ to 6 | 42½ | 30½ |
| 7 to 8 | 61 | 47½ | 7 to 8 | 35½ | 23½ |
| 9 to 12 | 55 | 41½ | 9 to 12 | 30½ | 18½ |

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2½ per cent.

## Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

| *Lap Welded Steel* | | *Charcoal Iron* | |
|---|---|---|---|
| 1¾ in. | 26½ | 1½ in. | 5 |
| 2 to 2¼ in. | 41 | 1¾ to 1⅞ in. | 15 |
| 2½ to 3 in. | 52 | 2 to 2¼ in. | 25 |
| 3¼ to 13 in. | 57 | 2½ to 3 in. | 30 |
| | | 3¼ to 4½ in. | 32 |

To large buyers of steel tubes, a supplementary discount of 5 per cent is allowed.

*Standard Commercial Seamless Boiler Tubes*

Discounts on cold-drawn or hot-rolled tubes in carload lots, f.o.b. Pittsburgh, follow:

| | | | |
|---|---|---|---|
| 1 in. | 63 | 2½ and 2¾ in. | 46 |
| 1¼ and 1½ in. | 55 | 3 in. | 50 |
| 1¾ in. | 36 | 3¼ to 4 in. | 55 |
| 2 and 2¼ in. | 42 | 4¼ in. to 5 in. | 47 |

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

*Blue Annealed*

| Cents per Lb. | | Cents per Lb. | |
|---|---|---|---|
| No. 8 and heavier | 2.35 | Nos. 13 and 14 | 2.50 |
| Nos. 9 and 10 (base) | 2.40 | Nos. 15 and 16 | 2.60 |
| Nos. 11 and 12 | 2.45 | | |

*Box Annealed, One Pass Cold Rolled*

| Cents per Lb. | | Cents per Lb. | |
|---|---|---|---|
| Nos. 17 to 21 | 2.95 | No. 28 (base) | 3.15 |
| Nos. 22 to 24 | 3.00 | No. 29 | 3.25 |
| Nos. 25 and 26 | 3.05 | No. 30 | 3.35 |
| No. 27 | 3.10 | | |

*Galvanized*

| Cents per Lb. | | Cents per Lb. | |
|---|---|---|---|
| Nos. 10 and 11 | 3.15 | Nos. 25 and 26 | 3.85 |
| Nos. 12 to 14 | 3.25 | No. 27 | 4.00 |
| Nos. 15 and 16 | 3.40 | No. 28 (base) | 4.15 |
| Nos. 17 to 21 | 3.55 | No. 29 | 4.40 |
| Nos. 22 to 24 | 3.70 | No. 30 | 4.65 |

*Tin-Mill Black Plate*

| Cents per Lb. | | Cents per Lb. | |
|---|---|---|---|
| Nos. 15 and 16 | 2.95 | No. 28 (base) | 3.15 |
| Nos. 17 to 21 | 3.00 | No. 29 | 3.20 |
| Nos. 22 to 24 | 3.05 | No. 30 | 3.20 |
| Nos. 25 to 27 | 3.10 | Nos. 30½ and 31 | 3.25 |

# EXPORT GOOD DESPITE PRICES

## South Manchuria Rails Placed in Germany — Sheets Active—Wire for Export Advanced

NEW YORK, April 18.—Even in the face of a rising market in the United States and other agencies that tend to make export quotations higher, trade with Japan continues good. A large part of the buying, however, is either governmental, semi-governmental or from large consumers satisfying annual requirements. The Nippon Oil Co. is again in the market for its usual tonnage of between 15,000 and 20,000 base boxes of tin plate. Another transmission tower inquiry recently appeared, calling for about 3000 tons of structural steel for about 350 towers of a heavy type. From the same source there is also an inquiry for between 600 and 700 tons of 5/16- to ⅞-in. steel plates for fabrication into pipe. The Imperial Government Railways closed during the past week on about 900 tons of special length 25-lb. and 60-lb. rails and accessories for making frogs, turnouts, switches, etc.

### China's Market Growing Worse

Despite the activity in Japan, which in the past has generally been reflected to a certain extent by China, the Chinese market to-day is extremely dull. There has been purchasing of electric power units and some inquiry from municipalities for various materials involving iron and steel, but according to Shanghai and Hong Kong banks the financial and political situation is growing steadily worse.

The black sheet market in Japan begins to show more activity than has prevailed recently, but some difficulty is being encountered now by exporters in placing orders with mills at figures that will be satisfactory to the Japanese buyer, a number of mills being quite independent. One of the largest Japanese houses recently placed an order with a mill for 1000 tons of light gage black sheets and there is an inquiry now current for various gages of black sheets totaling 3000 tons. The Imperial Government placed its tender for 2650 tons and 280 tons of bridge material with the Mitsubishi Shoji Kaisha, New York, and it will probably be furnished by the leading interest.

While the construction of the Tokio sewage system, work on which has begun, will probably involve a fairly large tonnage of cast iron pipe, there are Japanese foundries equipped for this production.

### South Manchuria Rails Go to Germany

The rail requirements of the South Manchuria Railway Co., which recently issued an inquiry for about 6000 to 7000 tons of 100-lb. rails, duplicating an order previously placed in this country, have gone to Germany. A strong effort was made by the Japanese branch houses in New York to obtain the order, but the difference in price was wide. It is believed to have gone at better than $44, c.i.f. Dairen. At present, it is probably possible to obtain rails at about $35 per ton, f.a.s. Hamburg. Another rail inquiry which will appear in this market some time this year is from the Ulen Contracting Co., 120 Broadway, New York, which is executing a contract with the Bolivian Government for the construction of about 128 miles of metre gage railroad. Grading is well advanced and, according to present plans, about one-half the rail tonnage is to be delivered by April 1, 1923. The total tonnage will probably be about 12,000 tons of 60-lb. rails and accessories, as well as about 1000 tons of structural steel for bridges and culverts. While the order might go to the United States, with rails at $35 per ton, Hamburg and a 30s. freight rate from Hamburg to Valparaiso, Chile, the port of delivery for this project, the competition would naturally be keen. The Brazilian Government has approved additional purchases of material in the United States for the large irrigation project in northeastern Brazil, work on which is being done by Dwight P. Robinson, Inc., New York. The approved purchases will include twelve locomotives.

At present there is evidently considerable $8 freight still obtainable to the Far East, and it is reported that some new lines are taking contracts at $8.50 per ton. Under the circumstances, unless the freight rate from the Pacific Coast is increased, exporters able to buy in the Chicago district will be able to ship at the equivalent of the $8 rate, as the rail charge to Pacific Coast ports from there is 50c. per 100-lb. and the ocean freight to the Far East $3.50 per ton. This represents a saving of about $1.50 per ton over the rate from New York unless the old rates hold.

German competition to-day is rather generally reduced to articles into which considerable labor costs enter. On the general iron and steel items German sellers are unable to compete. American prices on bars of ¼-in. and heavier are better than those of German mills, but on the smaller sizes the German price is lower, so that on a mixed tonnage of various sizes, the American seller is about on a par with the German.

German aluminum, which has quite steadily undersold the American product for many months, is to-day being quoted by German sellers in the United States at practically the same price as the domestic. This is attributed to the increased demand by German manufacturers of aluminum products and also to the fact that Germany has for some time past been offering aluminum at a lower price in the American market than was necessary in any other of her foreign markets. German aluminum has also been selling lower than French, British or Swiss.

### Export Wire Prices Advanced

Japanese purchases of wire and wire nails have lately been light and there is the possibility of German competition on these products being renewed in the Far East, as German wire mills have consistently refused to book orders for delivery beyond May 1. This action would leave Germany in a position to make new contracts for May-June delivery. Wire products for export have been advanced by American mills, a leading export steel company now quoting nails at $2.55 per 100 lb. keg, New York; bright and annealed wire, $2.35 per 100 lb.; barbed wire and staples, $3.15 per 100 lb.; galvanized wire, No. 15 gage and heavier, $2.60, and lighter gages $2.80 to $2.90 per 100 lb., all f.a.s. New York.

German blast furnaces, which, immediately following and for some time after the armistice, were unable to obtain a very large supply of minette ores from Lorraine, as the French curtailed the supply, have been investigating the usefulness of Wabana ore from Newfoundland. It is now reported that a German company in Essen has closed for about 800,000 tons of Wabana ore, which is high phosphorus and suitable for basic Bessemer pig iron. The contracts said to have been made with three companies producing Wabana ores, was about 18s. 6d., c.i.f. Rotterdam.

### Iron and Steel Combination in Czecho-Slovakia

The selling organization of Combined Iron & Steel Works in Czecho-Slovakia is, according to report made by the American trade commissioner in Prague, proving eminently successful. The purpose of the organization is to regulate sales of iron and steel products. The intention is to reduce expenses by dividing up the materials for the manufacture of which each is best suited and to reduce the number of employees. The combination is largely in control of the price situation and is fixing prices so that they will be advantageous to export. Domestic machine shops are reimbursed by 40 kr. per 100 kg. on iron purchased from the combination when they can prove that the iron went into material sold for export.

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The Western Malleables Co., Beaver Dam, Wis., which resumed the operation of its Elm Street foundry about two and a half months ago, on April 10 reopened its Center Street foundry in order to properly handle orders from the railroad and automotive industries especially. The South Street foundry is now being conditioned for early reopening, orders being of sufficient volume to make this possible at once. H. L. Kirsh is general manager.

# NON-FERROUS METALS

## The Week's Prices

Cents Per Pound for Early Delivery

| | Copper, New York | | Straits Tin | Lead | | Zinc | |
|---|---|---|---|---|---|---|---|
| April | Lake | Electrolytic* | New York | New York | St. Louis | New York | St. Louis |
| 12 | 12.87½ | 12.62½ | 30.37½ | 5.05 | 4.85 | 5.25 | 4.90 |
| 13 | 12.87½ | 12.62½ | 31.00 | 5.05 | 4.85 | 5.22½ | 4.87½ |
| 14 | 12.87½ | 12.62½ | 31.00 | 5.05 | 4.90 | 5.22½ | 4.87½ |
| 15 | 12.87½ | 12.62½ | .... | 5.05 | 4.90 | 5.25 | 4.90 |
| 17 | 12.87½ | 12.62½ | 31.00 | 5.15 | 4.95 | 5.25 | 4.90 |
| 18 | 12.87½ | 12.62½ | 31.00 | 5.15 | 4.95 | 5.25 | 4.90 |

*Refinery quotation.

## New York

NEW YORK, April 18.

The markets are generally quiet but the price tendency is steady to firm. The Easter holidays and the coal strike have tended to slacken active buying. Conditions in the copper market are unchanged and demand for tin has been very light. Lead is the strongest market and prices have advanced, while the zinc market is easier.

**Copper.**—There has been a slackening in demand for both domestic and foreign consumption, but prices are no lower. Electrolytic copper for April and second quarter delivery is quoted by several sellers at 12.62½c., refinery, or 12.87½c., delivered, the same as a week ago, although there are some producers who are not interested at less than 13c., delivered. As in March, after fairly heavy buying the first part of the month, demand has receded, but the tone of the market is fairly strong.

**Tin.**—This market more than any other has been influenced by the Easter season because of the closing of the London market from Friday to Monday, inclusive. The only active day in the past week was on Wednesday, April 12, when 300 to 400 tons of Straits tin for future shipment was sold at 30.25c. to 30.50c., the business being about equally divided between dealers and consumers. On other days, including to-day, sales have been light and prices have been firm, hovering close to 31c. For the present large consumers are not actively interested, but the consumption of tin is heavy. Spot Straits tin to-day is quoted at 31c., New York, nominal, while the London market was £2 to £3 per ton higher than a week ago, with spot standard at £152 15s., future standard £154, and spot Straits £155. Arrivals thus far this month have been 3065 tons, with 4225 tons reported afloat.

**Lead.**—The lead market is very strong and prices are practically controlled by independent sellers, the leading interest being virtually out of the market. Prompt shipment from the East is very difficult to obtain from leading independents, several of them to-day having no metal for that position to offer and another demanding a very high price. While the quotation of the leading interest is unchanged at 5c., New York, and 4.80c., St. Louis, values in the outside market, which may be taken as the ruling prices to-day, are 5.15c., New York, or 4.95c., St. Louis, for early delivery.

**Zinc.**—The market for prime Western has turned quiet and prices have eased slightly, with prevailing quotations for April-May delivery close to 4.90c., St. Louis, or 5.25c., New York. There is less demand from galvanizers temporarily, but the statistical position of the market is strong and prices are fairly firm.

**Antimony.**—The market continues strong and wholesale lots for early delivery are quoted at 5c., New York, duty paid.

**Aluminum.**—The leading interest continues to quote virgin metal, 98 to 99 per cent pure, for early delivery in wholesale lots at 19c. to 19.10c., f.o.b. plant, with importers offering the same grade at 18c. to 18.50c., New York, duty paid.

**Old Metals.**—The market is firm and inquiry has been fairly good during the week. Dealers' selling prices are as follows:

| | Cents Per Lb. |
|---|---|
| Copper, heavy and crucible | 12.50 |
| Copper, heavy and wire | 11.50 |
| Copper, light and bottoms | 9.50 |
| Heavy machine composition | 9.50 |
| Brass, heavy | 7.00 |
| Brass, light | 5.75 |
| No. 1 red brass or composition turnings | 8.00 |
| No. 1 yellow rod brass turnings | 6.25 |
| Lead, heavy | 4.25 |
| Lead, tea | 3.25 |
| Zinc | 3.00 |

## Chicago

APRIL 18.—Demand is generally better and advances have been registered in copper, tin, lead and antimony, as well as in a number of the old metal grades. We quote in carload lots: Lake copper, 13.25 to 13.50c.; tin, 32.75c.; lead, 5.10c.; spelter, 5c.; antimony, 6.25c., in less than carload lots. On old metals we quote: Copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 8c.; red brass, 7.50c.; yellow brass, 6c.; lead pipe, 3.75c.; zinc, 2.50c.; pewter, No. 1, 20c.; tin foil, 22.50c.; block tin, 25c.; all buying prices for less than carload lots.

## Lodge & Shipley and Carlton Companies Not in Proposed Merger

The option which the promoters of the proposed machine-tool merger held on the plants of the Lodge & Shipley Machine Tool Co. and the Carlton Machine Tool Co., Cincinnati, expired on April 15, at midnight. J. Wallace Carrel, vice-president and general manager of the Lodge & Shipley company, has authorized the following announcement:

"The Lodge & Shipley Machine Tool Co. is not in any merger or combination. There has been no change in ownership or management. The policy of the company remains the same and the business will be conducted as it has been in the past."

It is also announced officially that the Carlton Machine Tool Co. is not in any merger or combination of machine tool companies and that the ownership and management will remain the same.

## Court Decision on Stainless Steel Patents

Judge Learned Hand of the U. S. District Court, Southern District of New York, rendered Thursday, April 13, a decision on the rustless and stainless iron and steel patents of the American Stainless Steel Co. in the latter's case against the Ludlum Steel Co., Watervliet, N. Y., for infringement. The bill was dismissed for non-infringement.

The Ludlum company has patents covering chrome-silicon alloy steels, while the Brearley and Haynes patents cover stainless steels having a high chromium content. The decision apparently hinged on the silicon content of the Ludlum steels. "The issue," says the decision, "is whether the addition of silicon, which obviates the necessary additional heating of the plaintiff's composition beyond its critical point, makes the resulting article an infringement. Obviously this could not be. * * * Granting that the addition of silicon would not avoid infringement, it does not create it."

## Oil Pipe and Plates for Naval Lines

WASHINGTON, April 18.—While estimates have not been announced, it is understood that a considerable tonnage of oil pipe and plates will be required in connection with operations in naval oil reserves in Wyoming that are to be drained and stored as a result of the contract made between the Navy Department and the Department of Interior on the one hand and a private oil producing interest on the other. Announcement was made to-day at the White House that this agreement had been arranged. It was stated that it will involve pipe lines to the Pacific seaboard and to naval bases where oil is to be stored for the Navy in tanks that are to be erected.

## PERSONAL

H. L. Miller, who for the past eight years has been St. Louis district sales manager for the Youngstown Sheet & Tube, Co., Youngstown, Ohio, has resigned that position to join the Jones & Laughlin Steel Co., Pittsburgh, in the same capacity. He succeeds E. D. Batchelor, who on Jan. 1 was promoted from the position of St. Louis district sales agent to manager of sales in the wire department, with headquarters in Pittsburgh. Mr. Miller has been identified with the steel business for about 18 years, having been employed for a short period in the Youngstown plant, Republic Iron & Steel Co., after leaving high school. In 1905 he went with the Youngstown Sheet & Tube Co. in its order department and in 1914 was sent to the St. Louis office of that company. He became district manager in St. Louis about a year later.

H. L. MILLER

Leslie G. Lamborn has been appointed manager of the sheet metal and wire works division of the Parker Rust-Proof Co., Detroit. Mr. Lamborn has been identified with the wire and iron business for 30 years.

Leonard A. Bonner has been appointed district manager of the Great Western Smelting & Refining Co., with headquarters at Pittsburgh. He served in France as captain in the Motor Transport Corps of the American Expeditionary Forces and later was associated with the Standard Parts Co. and Willys Corporation. He is a son of James B. Bonner, of the United States Steel Corporation.

LEONARD A. BONNER

Richard F. Grant, member of M. A. Hanna & Co., Cleveland, was elected first vice-president of the Cleveland Chamber of Commerce at the annual meeting last week. F. C. Chandler, president Chandler Motor Car Co., was elected second vice-president.

F. G. Platt, formerly chairman of the board of directors New Britain Machine Co., New Britain, Conn., has returned from Baltimore, where he underwent an operation last December.

William H. Alford, vice-president Nash Motors Co., Kenosha, Wis., was elected one of five commissioners of the city of Kenosha, which has adopted the city manager plan of municipal government. Mr. Alford is one of three who will serve two-year terms.

Robert Gregg has been elected president and Thomas K. Glenn chairman of the board of directors of the Atlantic Steel Co., Atlanta, Ga.

Mark S. James has been made second vice-president of the Treadwell Engineering Co., Easton, Pa.

John M. Bailey, for more than 30 years secretary of the Pittsburgh Testing Laboratory, has severed that connection to become vice-president and secretary, the Standard Inspection Co., with offices in the Bessemer Building, Pittsburgh. Before joining the Pittsburgh Testing Laboratory, Mr. Bailey had been with the Burden Iron Works, Troy, N. Y., and the Portland Rolling Mill Co., Portland, Me.

W. C. Ames has been appointed district sales manager of the Sharon Pressed Steel Co. at 20 East Jackson Boulevard, Chicago. Ralph E. Phillips has been appointed district sales manager with headquarters at 66 Broadway, New York.

Robert L. Lake, president Ruth A. Lippner, secretary, and Walter McGowan, treasurer, formerly officers of the Steamship & Shipyard Equipment Corporation, New York, made public their respective resignations on April 12.

R. S. Cooper, vice-president and general manager of the Independent Pneumatic Tool Co., manufacturer of air and electric tools, will sail from New York April 22 on the S. S. Olympic for a short business trip to Europe, where he will visit branch offices and agencies established last year.

Victor H. Todd has been appointed to succeed Thomas Towne as general manager of the Federal Tool & Alloy Steel Corporation, Brooklyn.

Walter J. Muncaster has resigned from the position of vice-president and general manager of the Cumberland Steel Co., Cumberland, Md., after having held the position for 30 years. He was one of the organizers of the company, for the manufacture of ground shafting, under patents granted to him.

## Decision on Rates to Pacific Coast Recommended

WASHINGTON, April 18.—In one of the most voluminous tentative reports ever prepared for the Interstate Commerce Commission, Attorney-Examiner William A. Disque last week recommended that the commission should deny authority asked by transcontinental railroads to establish rates on iron products and numerous other commodies from the so-called defined territories east of the Rocky Mountains to Pacific Coast terminals which would be lower than rates to intermediate points. The report covers a number of cases affecting the so called fourth section as amended by section 500 of the transportation act relating to promotion of water transportation. The iron and steel rates, which it was proposed to reduce, would apply from all producing sections of the country to the Pacific terminals, and embrace practically all steel commodities.

It was proposed to establish a flat rate of $1 per 100 lb. from all producing points, except Colorado common points, which were to take a rate of 77c., on bar iron, hoops and bands, bolts, nuts, shingle bands, structural material, rails and fastenings, boiler flues, unbent tubing, ties, plates, sheets No. 11 and heavier, wrought pipe, horseshoes and locomotive axles. On pipe fittings and connection a rate of 5c. higher was proposed; 20c higher on pipe bands, pipe rods, link belting, chain, rough castings and forgings and horseshoe nails; 25c. higher on butts and hinges; 30c. higher on wire fencing; 40c. higher on stove pipe iron; 10c. less on spikes, wire, rods, billets, blooms, etc., and cast iron pipe, the latter to have a 40,000-lb. minimum.

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A perpetual injunction restraining the ironmolders' union from interfering with the business of Rice, Barton & Fales Machine & Iron Co., Worcester, Mass., has been handed down by the Massachusetts Superior Court. Foundrymen employed by the company went on strike June 10, 1921, following a notice of a reduction in wages. The foundry was reopened June 20, and has operated since.

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All but two of the greater Boston foundries recently closed by a strike of molders against a reduction in wages are operating full again. Striking molders have not been taken back except in a few instances, the foundries supplying their requirements from outside Massachusetts. The two closed plants are located in Waltham, Mass.

# OBITUARY

DR. WILLIAM NEWTON BEST, dean of the science of burning liquid fuel, and president and consulting engineer of the W. N. Best Furnace & Burner Corporation, New York, died April 11 in his 63d year. He was born at Clayton, near Quincy, Ill., on June 3, 1860. He came from Irish stock. He came from ing consisted of public school and a business college. The honorary degree of Doctor of Science was conferred by the Lincoln Memorial University at Cumberland Gap, Tenn., in 1917. After learning the trade of a machinist at Creston, Iowa, in the C. B. & Q. Railroad shops in 1877, he rose from machinist to superintendent, his last railroad work being a connection with the Los Angeles & Salt Lake Railroad. In 1901 he began the manufacture of inventions of his own. At the time of his death he had United States letters patent covering 44 inventions. Practically his entire life was devoted to the study of oil burners. It is estimated by engineers that 65 per cent of furnaces in this country burning oil for refining glass, steel and other metals, are using his inventions. He was author of "The Science of Burning Liquid Fuel."

DR. WILLIAM N. BEST

Dr. Best was a member of the American Railway Master Mechanics' Association, the American Institute of Mining Engineers, the International Railway Fuel Association, the Franklin Institute, the American Institute of Metals, the Aero Society of America, and the New York Academy of Sciences. In the scientific world, Dr. Best occupied an enviable position. Along with Thomas A. Edison and a few others of this country, he had the degree of Fellow of the Royal Society of Arts of London. He was on the board of the Engineering Societies Library and a member of the Engineers' Club of New York, and was one of a very important committee selected for the purpose of revising the boiler test code, this committee being appointed by the American Society of Mechanical Engineers, of which he was also a member. He was active in many religious and philanthropic organizations.

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JOSEPH H. CREIGHTON, treasurer and general manager Monongahela Iron & Steel Co., Pittsburgh and Paden City, W. Va., died in his home in Pittsburgh, April 5. He was born in Camden, N. J., 37 years ago and was graduated from Princeton University, class of 1907. He was in the employ of the Pennsylvania Railroad until he went to Pittsburgh nine years ago.

CHARLES L. SEABURY, naval architect and marine engineer, died April 7 in New York, from a complication of diseases. He was head of the Consolidated Ship Building Corporation, Morris Heights, New York, a concern which under his direction had built more than 2000 yachts and other vessels of similar character. Among the steel ships built by the company were the United States gunboats Dubuque and Paducah; yachts Kanawha, Niagara IV, Vitesse and Sovereign. Mr. Seabury was the inventor of several types of boiler and engine. He perfected the naphtha vapor engine before the gas engine came into general use. During the war he was an advisor on many naval contracts.

FRANK HENRY UNDERWOOD, senior member of the Underwood Machinery Co., South Boston, died last week at his home in Auburndale, Mass., at the age of 74 years. Mr. Underwood retired from active business about a year ago. He was a native of Tolland, Conn., and early in life was president of the Underwood Belting Co. of that place. He resided in Auburndale 29 years. Mr. Underwood was a member of the American Society of Mechanical Engineers.

CHARLES F. MOLLEY, vice-president and general manager, American Boron Products Co., Reading, Pa., died April 7.

CLIFTON WHARTON, a member of the old firm of Wharton Brothers, owners of the iron rolling mill plant in Pittsburgh, now the Republic department of the National Works, National Tube Co., and subsequently superintendent of the coal mines and coke ovens of the Jones & Laughlin Steel Co., died at the home of his son, Clifton Wharton, Jr., Plainfield, N. J., April 15. He was born Aug. 19, 1839. He is survived by three sons and three daughters. One of his sons, O. H. Wharton, was for a number of years vice-president of the Crucible Steel Co. of America, in charge of sales.

JOHN EICHLEAY, JR., founder of the Pittsburgh steel fabricating and contracting company that bears his name, died at his home in Pittsburgh, April 15. He was 68 years old.

PETER M. LOWE, for six years general sales manager and assistant secretary Kempsmith Mfg. Co., milling machines, Milwaukee, died April 13 at Garret, Ind., following a long illness. Mr. Lowe retired from the Kempsmith company about a year ago because of ill health. He was born March 18, 1877, at Adrian, Mich.

IRVING J. BENT, superintendent motive power, electrical department, Illinois Steel Co., South Chicago, Ill., died March 24, after a brief illness. Mr. Bent was born at Needham, Mass., Nov. 14, 1867, and was connected with the Westinghouse Electric & Mfg. Co. and the Allis-Chalmers Co. before going to South Works.

GEORGE ROGERS WALES, Beverly, Mass., sales agent Washburn Wire Co., Auburn, R. I., died April 14 at the Phillips House, Boston, following an operation. Early in life Mr. Wales was associated with his father under the firm name of John Wales & Co., iron and steel. About 20 years ago he organized the National Wire Co., New Haven, Conn., and when subsequently burned out, built a plant at Auburn, R. I., which eventually was taken over by the Washburn Wire Co.

THOMAS BRENNAN, superintendent of the Bessemer department of the South Side plant of Jones & Laughlin Steel Co., Pittsburgh, dropped dead early on April 18 while at the plant. Death was said to be due to heart disease. He had been connected with Jones & Laughlin Steel Co. for more than 30 years.

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## Malleable Foundries More Active

Malleable iron foundries are now operating at over 50 per cent of capacity as is shown by figures for shipments of March prepared by the American Malleable Castings Association. These figures, which are more satisfactory than had been expected, were compiled from reports made by all the members of the association. Sales of malleable castings showed little change from November to February inclusive but March shipments of castings increased 41 per cent over February. Shipments during March were 56 per cent of normal, using as a basis the average shipments during the five-year period from 1916 to 1920 inclusive.

A marked improvement in orders did not appear until about March 10 and this was not reflected to any great extent in shipments until a week or two later, so that the entire improvement will not be shown until the April figures are available. It is believed that this month will show as much gain over March as March gained over February.

The greatest improvement in orders for castings has been in the railroad field, but the demand from the automobile field also showed a good gain. There has been some improvement in the demand for general machine castings, but no revival has appeared in orders from the agricultural implement manufacturers.

The National Malleable Castings Co. resumed operations April 19 at its Cleveland plant, which had been shut down about a year.

# British Iron and Steel Market

## Business Quiet Over Holiday — Labor Dispute Still Raging—Continental Quotations

*(By Cable)*

LONDON, ENGLAND, April 18.

Engineering and shipbuilding labor disputes still continue and prospects for an early settlement are uncertain.

Iron and steel markets are quiet. The holiday interval is still lasting, most of the works remaining closed all the week.

Continental steel is dull. Prices are given in the table.

Tin plate demand continues, with prices firm.

Galvanized sheet quotations are firm, but demand is falling off.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at $4.40 per £1, as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Durham coke, delivered | £1 | 8½s. | to | £1 | 9s. | $6.27 | to | $6.38 |
| Cleveland No. 1 foundry | 4 | 15 | | | | 20.90 | | |
| Cleveland No. 3 foundry | 4 | 10 | | | | 19.80 | | |
| Cleveland No. 4 foundry | 4 | 7½ | | | | 19.25 | | |
| Cleveland No. 4 forge.. | 4 | 2½ | to | 4 | 5 | 18.15 | to | 18.70 |
| Cleveland basic ..... | 4 | 10 | | | | 19.80 | | |
| Hematite ..... | 7 | 0* | | | | 30.80* | | |
| East Coast mixed..... | 5 | 0 | to | 5 | 2½ | 22.00 | to | 22.55 |
| East Coast hematite... | 4 | 17½ | to | 5 | 0 | 21.45 | to | 22.00 |
| Ferromanganese ..... | 15 | 0 | & | 14 | 10* | 66.00 | & | 63.80* |
| Rails, 60 lb. and up.... | 8 | 0 | to | 9 | 10 | 35.20 | to | 41.80 |
| Billets ..... | 7 | 10 | to | 8 | 0 | 33.00 | to | 35.20 |
| Sheet and tin plate bars, Welsh ..... | 7 | 0 | to | 7 | 7½ | 30.80 | to | 32.45 |
| Tin plates, base box... | 0 | 19½ | to | 0 | 20 | 4.18 | to | 4.40 |
| | | | | | | C. per Lb. | | |
| Ship plates ..... | 9 | 5 | to | 10 | 10 | 1.80 | to | 2.04 |
| Boiler plates ..... | 13 | 10 | to | 14 | 0 | 2.65 | to | 2.72 |
| Tees ..... | 9 | 10 | to | 11 | 0 | 1.85 | to | 2.14 |
| Channels..... | 8 | 15 | to | 10 | 5 | 1.70 | to | 1.99 |
| Beams ..... | 8 | 10 | to | 10 | 0 | 1.65 | to | 1.94 |
| Round bars, ¾ to 3 in. | 10 | 10 | | | | 2.04 | | |
| Galvanized sheets, 24 g. | 16 | 0 | to | 16 | 5 | 3.13 | to | 3.16 |
| Black sheets ..... | 12 | 10 | to | 12 | 15 | 2.43 | to | 2.48 |
| Steel hoops ..... | 12 | 0 | & | 12 | 5* | 2.33 | & | 2.38* |
| Cold rolled steel strip, 20 g. ..... | 23 | 10 | | | | 4.56 | | |
| Cotton ties, Indian specifications ..... | 15 | 0 | | | | 2.95 | | |

*Export price.

### Continental Prices, All F.O.B., Delivery as Specified

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. 3 foundry pig iron: | | | | | | | | |
| Belgium, May..... | £4 | 17½s. | to | £5 | 0s. | $21.45 | to | $22.00 |
| Luxemburg, May.... | 4 | 17½ | to | 5 | 0 | 21.45 | to | 22.00 |
| France, June ..... | 5 | 7½ | to | 5 | 10 | 23.65 | to | 24.20 |
| Merchant bars: | | | | | | | | |
| Belgium, May, June. | 8 | 0 | to | 8 | 10 | 1.57 | to | 1.67 |
| Luxemburg, June.... | 8 | 12½ | | | | 1.69 | | |
| Germany, June, July | 8 | 0 | to | 8 | 10 | 1.57 | to | 1.67 |
| France, May, June... | 8 | 0 | to | 8 | 10 | 1.57 | to | 1.67 |
| Joists (beams): | | | | | | | | |
| France, April, May.. | 7 | 15 | | | | 1.52 | | |
| Luxemburg, June.... | 7 | 12½ | | | | 1.50 | | |
| Belgium, May..... | 7 | 7½ | to | 7 | 12½ | 1.45 | to | 1.50 |
| 3/16-In. plates: | | | | | | | | |
| Germany, May, June | 8 | 10 | to | 8 | 15 | 1.67 | to | 1.72 |

## Strikes Holding Up Business—Shipbuilding Industry at Low Ebb

LONDON, ENGLAND, April 5.—Business in the iron and steel trades is still hampered by the two great industrial disputes, and latest developments point to a long struggle. The Shipbuilding Employers Federation offered to modify their terms by withdrawing the war bonus in two parts, one cut of 10s. 6d. to come into force from March 29 last, and a further 6s. cut to come into force from April 26. The latest ballot of the men taken, however, shows a majority of three to one against acceptance, and there, for the time being, the matter stands. In the engineering dispute, the employers set forth a memorandum, which 46 unions have decided to agree to, but the main union, the Amalgamated Engineering Union, has decided against it, and therefore now stands alone.

It is of course impossible to do business on any considerable scale while troubles of this sort are involved, and the result has been that latterly the demand for pig iron, which market seemed to be getting on its feet again, has diminished considerably, more especially in the home trade. Naturally home consumers are not anxious to enter into any contracts at a time like this, and though a fair amount of export business is still moving, another Cleveland furnace has had to be blown out. In this district, therefore, there are now only five furnaces which are producing foundry pig iron. Should the disputes be settled quickly, it is quite possible that a temporary shortage of foundry iron might occur, because stocks are being cleared up. In fact, at the present time No. 1 Cleveland cannot be obtained, and even low grade iron is fetching 5s. more than the officially quoted price. Other quotations are unchanged. Hematite is slightly easier owing to the slackened demand and East Coast Mixed Numbers are to be had freely at about 97s. 6d.

There is not much moving in the finished iron and steel trades. Works are wanting orders badly, but the demand is not forthcoming from home consumers. The exports, however, keep fairly steady.

At a meeting of traders and manufacturers held recently, Sir Alexander M. Kennedy said that in the whole of the federated area with which he was connected, which comprised practically all the shipbuilding yards in Scotland and England, 60 per cent of the stocks were unoccupied, 15 per cent were with vessels which had been canceled or on work which had been stopped, and only 25 per cent were occupied by vessels actually in the course of construction. In one district in England, which had 35 building stocks and employed about 15,000 men normally, at the present time there were only two boats in course of construction and two or three finishing in the river, which meant that only about 3000 men were employed.

## Railroad Car and Locomotive Business

Steel for the 16,000 cars ordered by the New York Central, totaling about 200,000 tons, will be placed shortly by the car builders, who are understood to have been covered by options taken at prices lower than those now being quoted by the mills. The official confirmation of these orders gives the distribution as follows: Standard Steel Car Co., 6500; American Car & Foundry Co., 5250; Pressed Steel Car Co., 2500; Pullman Co., 750; Buffalo Steel Car Co., 500; General American Car Co., 500. These figures are different from those reported last week.

The Baltimore & Ohio contemplates the purchase of 6000 cars and the Chesapeake & Ohio is asking prices on 7000. The Louisville & Nashville has let 500 additional gondola cars to the Chickasaw Shipbuilding & Car Co., or 1000 cars in all, and 1050 cars were ordered by the same road from the Cambria Steel Co., as noted last week. The Southern Railway is in the market for 2000 box cars, 500 automobile cars and 60 passenger cars. The Atlantic Coast Line is expected to inquire shortly for 750 box cars and has placed 100 steel phosphate cars with the Chickasaw Shipbuilding Co. The Nickel Plate is inquiring for 400 refrigerator cars.

The American Locomotive Co. reports sales during the past week of 99 locomotives, practically all to railroads. They are as follows: The New York Central & Hudson River Railroad, 35 eight-wheel switching locomotives. New York, New Haven & Hartford Railroad, 15 eight wheel switchers. Alabama & Great Southern Railway, 10 Mikado type. Cincinnati, New Orleans & Texas Pacific Railroad, 10 Mikado type. Mobile & Ohio Railway, 10 Mikado type. Long Island Railroad, 6 eight-wheel switchers. Tennessee Coal, Iron & Railroad Co., 4 locomotives, 2 consolidation type, 1 six-wheel switcher and 1 special tank engine. Camp Mfg. Co., Franklin, Va., 1 Prairie type. Norton Griffith & Co., of Brazil, 5 four-wheel tank engines and 3 Mikado type.

The New York Central bought 40 switching engines from the Lima Locomotive Co. and the Southern Railway, 35 Mikado type engines from the American Locomotive Co. The Chicago & Northwestern is asking for prices on 25 locomotives.

# Machinery Markets and News of the Works

## PIN HOPES ON RAILROAD BUYING

### Machine-Tool Trade Hopes for Improvement from That Source

### Santa Fe Adds 25 Items to Its Inquiries and Bids Close This Week at Chicago

Despite the small volume of railroad buying so far this year, the machine-tool trade continues to hope that the railroads will eventually be the means of lifting the industry out of the dullness which still clings to it. The Santa Fe Railroad, which has sent out several large inquiries in the past few months, will close bids April 22 on a large number of tools, including 25 items which have just been added. The Lake Erie & Western Railroad, a subsidiary of the New York Central, has issued an inquiry at Cleveland for 15 machines, mostly woodworking. The New York Central Lines have a large list prepared, and it is reported that this will be issued soon, though appropriations have not yet been provided.

Actual improvement in machine-tool buying is noted, but it is slow and the condition of the industry as a whole has moved forward only slightly since the first of the year. The most hopeful indication is the better demand for used tools, and while this does not help the builder of new machines, except by removing the old machines from the market, it indicates more interest on the part of buyers.

The Cleveland Board of Education is preparing a large list for Cleveland schools. The Ohio Cash Register Co., Dayton, Ohio, is in the market for punch presses, profiling machines and multiple spindle drills. The General Fire Extinguisher Co., Providence, R. I., has revived an old list and may buy soon. A Cincinnati tool builder has taken an order for 12 tools from an Indiana manufacturer.

## New York

NEW YORK, April 18.

Not much change is reported in the local machine-tool situation. While the rate of improvement is exceedingly slow, dealers and other sellers of tools derive some satisfaction from the fact that the trend is slightly toward better business. The improvement taking place in other industries is a note of encouragement. Orders for a few machines are being placed by the General Electric Co., a part of the purchasing being for its switchboard department.

The New York Central Railroad has a large list of machine tools in readiness, but it is not known by the trade when inquiries will be issued as no appropriation has yet been made for such purchases.

The crane market in this district begins to show slightly less activity. Very few new inquiries are appearing, but a number of old ones are still pending. Of the few new inquiries, a number specify either new or second-hand cranes, price evidently being the first consideration. A recent revival of an old inquiry was made by the Delaware & Hudson Railroad, Albany, N. Y. It calls for bids on a 10-ton, 100-ft. span overhead traveling crane. The New York, Ontario & Western Railroad, New York, has inquired for a used 10-ton or 15-ton pillar type crane. The Hammond Typewriter Co., 537 East Sixty-ninth Street, New York, is accepting quotations on a 15-ton locomotive crane, equipped with 1-yd. bucket. The Worthington Pump & Machinery Corporation, Harrison, N. J., is in the market for a 25-ton, 48-ft. span overhead traveling crane, new or used, for the Blake & Knowles works, East Cambridge, Mass. The Standard Oil Co., New York, is receiving bids on a 10-ton, 50-ft. span electric crane. The inquiry of the U. G. I. Contracting Co., Philadelphia, which only recently appeared, calls for a 50-ton, 43-ft. 6-in. span electric crane with 15-ton auxiliary hoist, for Bridgeport, Pa. The filtration division of the Department of Public Works, Buffalo, N. Y., although not yet in the market, will probably soon issue a call for bids on an overhead traveling crane. The recent opening of bids by the Superintendent of Public Works, Albany, on two 5-ton gantry cranes for the barge canal at Syracuse and Rochester, resulted in a high bid of $40,250 each by Heyl & Patterson and a low bid of $26,986 for the Rochester crane and $26,816 for the Syracuse crane by the Lakeside Bridge & Steel Co., Milwaukee, Wis.

Among the recent sales were: Shaw Electric Crane Co., one 10-ton overhead traveling crane and two 3-ton jib cranes to the Davies & Thomas Co., Catasaqua, Pa.; Philip T. King, 30 Church Street, New York, a 20-ton used Orton & Steinbrenner locomotive crane to the Ward Engineering Co., Charleston, S. C.; Joseph T. Ryerson & Son, a 5-ton, 21-ft. 3-in. span Chisholm-Moore Mfg. Co. hand power crane to the Universal Ornamental Iron & Steel Co., New York.

The Arnold Levien Iron Works, 226 East Forty-first Street, New York, has leased a one-story factory, 100 x 100 ft., to be erected on Thirteenth Street, Long Island City, by the Neivel Realty Corporation. It will be used as a branch plant.

The Knickerbocker Ice Co., 45 East Forty-second Street, New York, will build a two-story addition to the power house at Rockville Centre, L. I., 33 x 55 ft.

The Todd Shipyards Corporation, 25 Broadway, New York, will expend in excess of $300,000 for enlargements in its new plant at Mobile, Ala., comprising the former yard of the Mobile Shipbuilding Co., to include the installation of a 10,000-ton floating drydock, construction of a new 500-ft. pier, repair and operating shops, etc. It will be known as the Todd Shipbuilding & Drydock Co. of Mobile.

The Snow Garage Co., Henderson Harbor, N. Y., will install a new triplex chain hoist, track and traveler at its plant. Inquiries will be sent out at once.

The Brooklyn Edison Co., 360 Pearl Street, Brooklyn, is arranging for the sale of stock for $10,000,000, a portion of the proceeds to be used for the erection of a new generating plant and other extensions and improvements. Work will soon commence on a two-story power house on Wakeman Place to cost $300,000.

The Huntoon Ice Co., 631 Hudson Street, New York, has filed plans for the erection of a new four-story ice-manufacturing and refrigerating plant, 80 x 90 ft., to cost about $130,000, including machinery. Russell G. Cory, 50 Church Street, is architect and engineer.

The Municipal Gas Co., Albany, N. Y., will soon commence the erection of the superstructure for its new electric power plant addition, to double approximately the present capacity of 20,000 horsepower. Plans have been completed.

The New York Edison Co., 130 East Fifteenth Street, New York, will commence the immediate erection of a new power house, 25 x 100 ft., at 33 Attorney Street, to cost about $75,000. William Whitehill, Forty-first Street and Sixth Avenue, is architect.

The Andrews Iron & Steel Co., Utica, N. Y., has completed the remodeling of the building on Park Avenue, recently secured from the International Heater Co., and will use the plant for a steel fabricating works. George W. Andrews is president and general manager.

The Adolph Starke Estate, 50 Columbia Street, Brooklyn,

manufacturer of spikes, nails, etc., will install new electric hoisting equipment and other apparatus at its plant.

The New York State Railways, Utica, N. Y., is disposing of a bond issue of $3,000,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. J. F. Hamilton is president.

The Cosmopolitan Body & Repair Co., 507 West Thirty-fifth Street, New York, manufacturer of automobile bodies, etc., has leased the building at 136 West Eighteenth Street for a new plant.

Ovens, electric power equipment, conveying apparatus and other mechanical equipment will be installed in the two-story plant, 163 x 202 ft., to be erected at Walton Avenue and 144th Street, New York, by the General Baking Co., 342 Madison Avenue, and estimated to cost $250,000. The Ballinger Co., 1328 Broadway, is architect. William Denninger is president.

The Iron Products Corporation, 90 West Street, New York, is arranging to double its capital stock from 150,000 to 300,000 shares, the new issue to be used for plant extensions, equipment and facilities for increased manufacture.

The Becker Co., 513 William Street, Utica, N. Y., will install new equipment at its machine shop, including lathe, bench tools, etc.

The Ice Service Co., 152 West Forty-second Street, New York, will make extensions and improvements in its plant at 519-21 East Eighteenth Street, to cost about $25,000, to include a new cooling tower, condensers, electrical equipment, etc. James S. Maher, 431 West Fourteenth Street, is architect.

Schiller & Katz, New York, have leased the three-story building at 474 West 130th Street for an automobile service and repair works.

The Cohoes Power & Light Corporation, Albany, N. Y., is planning for extensions and improvements in its hydroelectric power plant and system to cost about $900,000.

The International Pulp Co., 41 Park Row, New York, is planning for the installation of grinding and other machinery at its plant at Gouverneur, N. Y.

The United Verde Copper Co., 20 Exchange Place, New York, has completed plans for the construction of a new crushing plant at Clarksdale, Ariz., estimated to cost in excess of $150,000, including machinery.

The Long Island Lighting Co., 50 Church Street, New York, has disposed of a bond issue of $600,000, a portion of the proceeds to be used for additions to its power plants and electric system.

Fire, April 10, destroyed a portion of the plant of the Flintkote Co., Madison and Central avenues, East Rutherford, N. J., manufacturer of roofing products, with loss estimated at $200,000, including equipment. Headquarters of the company are at 88 Pearl Street, Boston, Mass.

A vocational department will be installed in the two-story junior high school to be erected by the Board of Education, Collingswood, N. J., bids for which will be asked at an early date. J. S. Davis, 1713 Sansom Street, Philadelphia, is architect.

The Richelieu Motor Corporation, 649 Mattison Avenue, Asbury Park, N. J., is considering the purchase of property at Rahway, N. J., for the establishment of a plant. Samuel A. Reeves is president. The company was incorporated recently with a capital of $2,000,000 to manufacture automobiles.

The National Vitaphone Corporation, 1112 North Avenue, Plainfield, N. J., manufacturer of talking machines, is planning for the installation of new machine tools and automatic machinery.

Fire, April 16, destroyed a portion of the car shops of the Pennsylvania Railroad Co. at Kearny, N. J., with loss estimated in excess of $550,000, including equipment. The erecting shop, tin and metal shop and cabinet shop were destroyed.

The Fulton Lumber Terminal Co., 21 East Fortieth Street, New York, will install a complete electrically-operated haulage system, with loading and unloading machinery and other mechanical equipment, at its new terminal on the Hackensack River, near Jersey City, N. J. The entire plant is estimated to cost in excess of $500,000. Ernest R. Shaw is manager.

A vocational department will be installed at the new high school to be constructed at Phillipsburg, N. J., estimated to cost about $300,000.

Fire, April 11, destroyed the coal pocket of the Erie Railroad, Provost Street terminal, Jersey City, N. J., with equipment for coaling seven locomotives at one time, with loss estimated at $50,000. It will be rebuilt. Headquarters are at 50 Church Street, New York.

The De Cozen Motor Co., 20 Branford Place, Newark, N. J., has had plans prepared for the erection of a new five-story building at 968 Broad Street, to cost about $250,000.

The American Toy Co., Newark, has leased the factory at 69-71 Bruen Street for the establishment of a new plant.

The Commissioner of Public Works, City Hall, Newark, is having plans prepared for an addition to the municipal garage and service building on Vroom Alley. The second floor will be provided with a complete machine shop for parts production and repairs. The extension will cost about $175,000. Harry F. Briscoe is architect.

Charles H. Bennett, 28 Spruce Street, Newark, is having plans drawn for a two-story automobile repair and service works on Saybrook Place to cost about $100,000. A machine shop will be installed. Guilbert & Betelle, 546 Broad Street, are architects.

## Chicago

CHICAGO, April 17.

Sentiment in the machine tool market has improved, largely because of an increase in the number of inquiries. Actual sales, however, are still comparatively light and consist principally of single machines. Large industrial companies are notably absent from the market and current business is coming from a wide range of smaller shops. One favorable indication is the fact that collections, which have been exceedingly slow for many months, have improved materially within the past few weeks. The railroads continue to delay action on their outstanding lists, although the Santa Fe has added numerous items to its inquiry, on all of which it will receive figures April 22. The following additions, covering machine tools and wood-working equipment, have been made to its list within the past week:

One heavy duty motor-driven drill press, Colburn D-8 or equivalent.

One motor-driven 84-in. Diamond heavy face and guide bar grinding machine for grinding work up to 84 in. long and 23⅜ in. in height.

One 36-in. motor-driven draw-cut shaper.

One motor-driven 6-ft. heavy boring and turning mill.

One belt-driven 16-in. x 16-ft. or 18-in. x 8-ft. engine lathe.

One belt-driven 3-in. x 36-in. turret lathe.

Two belt-driven 2¼-in. x 36-in. turret lathes, Jones & Lamson or equivalent.

One belt-driven Steinle or Libby, or equivalent, 24-in. full swing side carriage turret lathe having 6¼ or 7½-in. hole through spindle.

One four-spindle belt-driven nut tapper, capacity up to 2¼-in. nuts.

One 42-in. belt-driven band saw.

One Brown & Sharpe No. 13, or equivalent, universal tool grinder.

Two Morton motor-driven 36-in. draw cut shapers.

One motor-driven 24-in. x 24-in. x 10-ft. slab miller.

One motor-driven Ransom No. 45, or equivalent, double emery grinder.

One heavy duty engine lathe with 36-in. swing and 80 in. between centers.

One Lucas No. 33, or equivalent, horizontal boring, drilling and milling machine with special platen, 46 x 64 in. and circular swivel table lock-bolted in four positions.

Two 6-ft. heavy duty type plain radial drills.

One 16-in. American, No. 802, or equivalent, extra heavy hand jointer, belt driven.

One cut off saw as per Fig. 6120, American Wood-Working Machine Co. catalog.

One belt-driven American No. 6390, or equivalent, universal saw bench with double arbor saw about 16 in. in diameter.

One American No. 77, or equivalent, planer and matcher, 15 in. x 6 ft.

One Oliver No. 3, or equivalent, wood trimmer.

Except for a general readjustment of prices by the Cincinnati Electric Tool Co., Cincinnati, amounting to a reduction of 10 to 15 per cent on some of its portable drills and grinders, no further price reductions have been announced.

The Grafton Foundry Co., Grafton, Wis., has ordered a No. 5 Whiting cupola.

The Chicago Wheel & Spring Co., 414 East Thirty-fourth Street, Chicago, is receiving bids through an architect for a two-story plant, 50 x 50 ft., to cost $25,000.

The Goodspeed Brothers Auto Co., Joliet, Ill., plans to erect a one-story garage, 60 x 150 ft., to cost $40,000.

The Elsmere Mfg. Co., manufacturer of sashes and doors, 2251 North Knox Avenue, Chicago, has let a contract for a two-story factory, 47 x 50 ft., to cost $10,900.

Smith & Hocke, 932 West Marquette Road, Chicago, have prepared plans for a one-story garage at the northeast corner of Calumet Avenue and Sixty-third Street to cost $70,000.

Joseph H. Saris, Beloit, Wis., has had plans drawn by

J. T. Hetherington & Son, 38 South Dearborn Street, Chicago, for a two-story automobile showroom, garage and factory, 100 x 130 ft., at 412 Broad Street, Beloit, to cost $100,000.

Zoller & Hunt, 520 North Dearborn Street, Chicago, have had plans drawn for a two-story garage, 100 x 149 ft., at 1440-48 North Clark Street, to cost $125,000.

Ira Bowen has leased the Lamoni Machine Shop, Lamoni, Iowa, and will operate it in connection with his automobile salvage shop.

H. A. Myhre, formerly of Veblen, S. D., has leased J. Achter's machine shop at Glenwood, Minn.

The Gate City Iron Works, 2814 Cuming Street, Omaha, Neb., has purchased property at 1018-20 Seward Street, where it will erect a plant, 40 x 60 ft.

The Champion Pneumatic Machine Co., 1402 South Michigan Avenue, Chicago, has work under way on its new one-story plant, 80 x 135 ft., at Bennett and South Chicago avenues, estimated to cost $28,000. Samuel Schlosser is president.

The North American Car Co., 328 South La Salle Street, Chicago, manufacturer of tank cars, has completed plans for a one-story erecting shop, 80 x 120 ft., at California Avenue and 135th Street, to cost about $45,000. H. H. Brigham is president.

The City Council, Whitehall, Ill., has preliminary plans under way for extensions and improvements in the municipal electric power plant to cost about $75,000. The Caldwell Engineering Co., Ayers Bank Building, Jacksonville, Ill., is engineer.

The Dwyer Equipment Co., 9 West Kinzie Street, Chicago, manufacturer of ventilating fans and equipment, will soon commence the erection of a new one-story plant at 4534 North Avenue, 60 x 125 ft.

A vocational department will be installed in the two-story and basement high school to be erected at Stillwater, Minn., estimated to cost about $150,000. Steubins & Haxby, Auditorium Building, Minneapolis, Minn., are architects.

The Colorado Accumulative Co., Lafayette, Colo., organized to manufacture storage batteries, has acquired a local site and will soon commence the erection of a new one-story plant. The local Commercial Association is interested in the project.

The Mimbres Valley Land & Utilities Co., Deming, N. M., is perfecting plans for the operation of a plant to manufacture special automatic hay-baling machinery. C. S. Cleaver is president.

The Nicholas Wire & Sheet Co., Davenport, Iowa, occupying a portion of the former plant of the Corn Products Co., is arranging for the re-establishment of its plant, recently partially destroyed by fire with loss reported at $200,000, including equipment.

John A. Reed, Cedar Rapids, Iowa, and associates are organizing a company to construct and operate a hydroelectric generating plant on the Maquoketta River, with local distributing lines. It is estimated to cost $100,000, including machinery. Holland, Ackerman & Holland, 53 West Jackson Boulevard, Chicago, are architects.

The Universal Electric Sign Co., Chicago, recently organized, has leased a building at 4854 West Kinzie Street for the manufacture of metal electric signs. R. I. O'Connor is president and G. H. Thompson, Jr., secretary and treasurer.

The Western Electric Co., Cicero and Twenty-second avenues, Cicero, Ill., is taking bids for a one-story addition, 222 x 305 ft. Walter R. Kattelle, company address, is architect.

The Chicago, Burlington & Quincy Railroad Co., 547 West Jackson Boulevard, Chicago, is completing plans for new car and locomotive shops at Denver, Colo., estimated to cost in excess of $1,000,000 with machinery.

A vocational department will be installed in the new two-story and basement high school, 100 x 156 ft., to be erected at Fremont, Neb., estimated to cost $250,000. A. H. Dyer & Co., Fremont, are architects.

## Philadelphia

PHILADELPHIA, April 17.

The Electric Hoist & Derrick Co., 625 Equitable Building, Baltimore, has been organized to sell all of the electric hoists and derricks now at the Hog Island shipyard, Philadelphia. A sales office has been opened at warehouse No. 10, Hog Island. William H. Price, Jr., is in charge.

A one-story power house will be erected by the Pennsylvania Apartments, Inc., Philadelphia, in connection with a new apartment building at 3905 Sansom Street, estimated to cost about $1,000,000.

The White Co., 112 North Broad Street, Philadelphia, automobiles, has leased the building at 1316-18 Poplar Street for a new service and repair works.

The Bureau of Water, City Hall, Philadelphia, will soon commence the construction of an electrically operated pumping plant at Lower Roxborough.

The Borough Council, Humme'stown, Pa., is considering plans for the establishment of a municipal electric light and power plant.

A vocational department will be installed in the new high school to be erected at Sharon, Pa., for which a bond issue of $440,000 has been approved.

The Luzerne County Gas & Electric Co., Wilkes-Barre, Pa., will make extensions and improvements in its electric plant to cost about $350,000, including the installation of a new generator of 20,000-kw. capacity and other machinery.

The Imperial Motor Corporation, 45 West Market Street, Wilkes-Barre, Pa., will build a new two-story service and repair works, 77 x 235 ft.

The Peters Motor Car Co., Bethlehem, Pa., recently removing from Trenton, N. J., and establishing an automobile manufacturing plant at Bethlehem, is arranging for the purchase of an adjoining site, comprising about 15 acres, for extensions.

A vocational department will be installed in the one-story senior high school to be erected at Harrisburg, Pa., 140 x 180 ft.

Motors conveying machinery and other mechanical equipment will be installed in the two-story plant to be erected by the New Cumberland Box Co., New Cumberland, Pa., estimated to cost about $60,000.

A vocational department will be installed in the new two-story junior high school to be erected on State Street, Trenton, N. J., estimated to cost $500,000.

The State Board of Education, State House, Trenton, N. J., will commence the immediate erection of a new power house at the State School for the Deaf at Scudder Falls, N. J.

Walter B. Gilbert & Co., York, Pa., have taken title to the plant and business of the Pullman Automatic Ventilator & Mfg. Co., manufacturer of ventilators, metal ceilings, cornices, etc., and in the future will operate the works for the production of the same products, with a line of other sheet metal specialties.

The Harrisburg Light & Power Co., Harrisburg, Pa., will build a new power house on Maclay Street.

The Union Transfer Co., 1004 Spring Garden Street, Philadelphia, will commence the immediate construction of a one-story service and repair works for company cars and motor trucks, 105 x 165 ft., at 110-16 North Virginia Avenue, Atlantic City, N. J., to cost about $100,000, including equipment.

The War Department, Washington, will discontinue the ordnance depot at Middletown, Pa., and will establish works for airplane repair and parts manufacture. The present buildings will be equipped for the new service.

The Pennsylvania-Ohio Electric Co., Sharon, Pa., has arranged for a bond issue of $1,950,000, a portion of the proceeds to be used for extensions and improvements in generating plants and system, including equipment.

## Pittsburgh

PITTSBURGH, April 17.

Inquiries for machine tools and equipment hold up well, but the past week has not brought out as much business as the few previous weeks. The effect of the coal strike has proven more serious than was expected, and the possibility of the curtailment of plant operations naturally makes the iron and steel industry more concerned about fuel supplies than purchase of equipment. An absence of machine-tool lists still is noted and purchases still are almost entirely of single tools.

Crane inquiries are in fair volume, and since makers are satisfied that the market definitely has turned the corner, there are intimations of an early advance in prices, based on the better demand and the rising trend of raw material prices. The Milwaukee Electric Crane & Mfg. Co. has taken a 50-ton, 1-motor, 30-ft. span special crane for the Niagara, Lockport & Ontario Power Co. for a new substation at Falconer, N. Y. The Koppel Industrial Car & Equipment Co., Koppel, Pa., has revived an inquiry put out about a year ago for a 7½-ton crane. Demand for small hoists is good and sales are reported by the Northern Engineering Works and Manning, Maxwell & Moore, Inc., the latter distributing the Detroit hoist. Makers of rolling mills are figuring on a number of inquiries and the United Engineering & Foundry Co., Pittsburgh, recently took an order for a cold strip mill for the Morris & Bailey Steel Co., Pittsburgh. The Pawling & Harnischfeger Co., Milwaukee, has taken orders for 10-ton cranes for the Buffalo Steel Car Co. and the American Car & Foundry Co., Depew, N. Y.

The Dillon Brothers Co., Wheeling, W. Va., mentioned last week as a prospective buyer of forge shop equipment, is being reorganized as the Dillon Brothers Machine Co. It will be capitalized at $150,000 under the laws of Ohio and expects to build within a year a machine shop and forge

shop at Bridgeport, Ohio, across the river from its present location.

The Pittsburgh Spring & Steel Co., Farmers' Bank Building, Pittsburgh, manufacturer of steel springs, etc., is considering rebuilding the portion of its plant destroyed by fire, April 6, with loss estimated at $150,000, including equipment. The tempering department was demolished.

The Board of Education, Brookville, Pa., is arranging a list of equipment for installation in the vocational and engineering departments at the high school.

Fire, April 14, destroyed a portion of the erecting shops at the plant of the American Bridge Co., Pittsburgh, with loss estimated at $75,000, including cranes and other equipment.

The Radio Electric Co., Pittsburgh, manufacturer of wireless equipment and instruments, has leased the six-story building at 1427-29 Liberty Avenue, 31 x 100 ft., for the establishment of a plant.

The Sewickley Electric Mfg. Co., Sewickley, Pa., recently organized to manufacture electric meters and other precision equipment, has acquired a reinforced-concrete building at Stoops Ferry, Pa., totaling about 40,000 sq. ft. of floor space, for its proposed plant. Headquarters will be maintained at Sewickley. Tracy M. Kramer is president; and Frank Semple, secretary and treasurer.

The Community Power Co., Petersburg, Va., has secured permission for the construction of a dam on the south branch of the Potomac River, at Royal Glen Gap, near Romney, W. Va., for a hydroelectric power plant at this location.

T. W. and E. L. Musgrave, Rivesville, W. Va., are organizing a company to establish a plant for the manufacture of cement blocks, concrete products, etc.

## New England

BOSTON, April 17.

An improvement in sentiment among machine-tool dealers is noted, due to a number of old prospects being revived and new ones entering the market. New inquiries, however, largely concern used equipment, but dealers hope to interest buyers in new machine tools. The inquiry of the General Fire Extinguisher Co., Providence, R. I., is reported as showing renewed life and is one of the most important pending. A local engineering firm is asking bids on four or five fairly large tools for a Massachusetts lighting plant's machine shop; a maker of wrenches, etc., has a tentative list out covering 10 used machines, some of which are large, to be used in a subsidiary plant; one local dealer reports a live inquiry for six used presses and numerous other smaller prospects; two interests contemplating the manufacture of radio apparatus are inquiring for small machine tools, and numerous prospects for single machines have developed. In addition, manufacturing interests heretofore inactive intimate that they will shortly need equipment.

Sales the past week include a Porter-Cable production lathe to a Vermont manufacturer of scales, etc., and another similar tool to a Granston, R. I., machinery builder; a 14-in. x 8-ft. used lathe to a West Virginia textile mill; 20-in. drill press and small grinder to a local insurance company for its inspection department; 14-in. x 6-ft. Flather lathe to a Porto Rico firm; a used 3-ft. radial drill to a New Bedford, Mass., textile mill, and a new 32-in. shaper to the United States Finishing Co., Norwich, Conn.

The local crane market is slightly more active. Bids are in for two 10-ton, two 2-ton and one 1-ton crane for the Naragansett Electric Co., Providence, for a new plant which will be completed in the fall. A Massachusetts pump manufacturer is inquiring for a 25-ton used crane, and Fred T. Ley & Co., Inc., Springfield, Mass., on a 5-ton bridge crane for the naval drydock, South Boston. Preliminary bids for estimating purposes have been asked by a Vermont interest on several hand cranes.

The American Optical Co., Southbridge, Mass., has decided to locate its Canadian branch at Belleville, Ont.

The New Bedford Gas & Edison Light Co., New Bedford, Mass., will soon commence the erection of a new power house and will issue bonds for $1,500,000, a portion of the proceeds to be used for plant and system extensions and improvements.

A one-story power plant will be erected by the Everett Factories Corporation, 210 Broadway, Everett, Mass., in connection with a new four-story factory, 45 x 325 ft., on Vine Street.

The Bridgeport Automobile Co., 386 Fairfield Avenue, Bridgeport, Conn., plans the erection of a two-story machine shop and service building on Courtland Street, to cost about $42,000.

A vocational department will be installed in the new high school to be erected at Fort Fairfield, Me., estimated to cost about $150,000. H. W. Rhodes, 574 Congress Street, Portland, Me., is architect.

The Boston & Maine Railroad Co., North Station, Boston, is planning to rebuild its engine house at Portsmouth, N. H., estimated to cost about $60,000, including equipment.

The International Silver Co., Meriden, Conn., has awarded a contract to the Immick Co., Meriden, for a one-story addition to its plant at Wallingford, Conn., 45 x 130 ft.

The Lowell Electric Light Corporation, Lowell, Mass., has been granted permission to issue stock for $416,000, a portion of the proceeds to be used for extensions and improvements in plant and system.

A vocational department will be installed in the proposed high school to be erected at Stamford, Conn., estimated to cost about $800,000.

The Cameron Appliance Co., Water Street, Everett, Mass., will erect a new one-story building, 68 x 115 ft. MacNaughton & Robinson, 101 Tremont Street, Boston, are architects.

## Baltimore

BALTIMORE, April 17.

The Brooks Mexican Petroleum Co., 7 St. Paul Street, Baltimore, recently organized, is planning the establishment of a new oil distributing plant at Curtis Bay, to include a steel tankage department of 300,000 bbl. capacity, steel pier, pumping plant and other equipment, estimated to cost close to $500,000. W. B. Brooks is vice-president and general manager.

A one-story power house, 50 x 60 ft., will be erected by the General Chemical Co., Race and Winder streets, Baltimore. The J. G. White Engineering Corporation, 43 Exchange Place, New York, is engineer.

The Hilgartner Marble Co., Sharp and Ostend streets, Baltimore, will install a new traveling crane and other equipment in connection with the enlargement of its plant.

The New Brick & Tile Co., Easton, Md., recently organized, has plans under way for a local plant to manufacture hollow tile, brick, building blocks, etc., and will purchase machinery at an early date. It is proposed to have the works ready for service during June. The company is headed by U. G. Ross, Robert L. Kemp and J. Elwood Smith, Easton.

J. B. Porter, P. O. Box 225, Norfolk, Va., is planning to purchase equipment for a tin and metal-working factory, to include shears, cornice brakes, cutting equipment, etc.

The Hagerstown & Frederick Railway Co., Hagerstown, Md., has been granted permission to issue bonds for $2,155,000, a portion of the proceeds to be used for extensions and improvements in its electric power plants and system. It will also change its name to the Potomac Public Service Corporation.

The City Council, Thomasville, Ga., has had plans completed for a municipal electric power plant. C. F. Galliher, First National Bank Building, Montgomery, Ala., is architect.

The Mexican Petroleum Corporation, 120 Broadway, New York, is completing plans for a new electrically-operated pumping plant at its works on First Avenue, Baltimore.

The Horace L. Smith & Son Co., Petersburg, Va., has acquired about 12 acres of land and plans the erection of new works for the manufacture of agricultural implements and equipment.

The Fulton Bag & Cotton Mill Co., Atlanta, Ga., has had plans prepared for a one-story addition to its power house, estimated to cost about $75,000. The J. E. Sirrine Co., Greenville, S. C., is engineer.

A vocational department will be installed in the new high school to be erected at Fayetteville, N. C., bids for which will be received until May 1. Milburn, Heister & Co., Durham, N. C., are architects.

The White Realty Corporation, 304 McBain Building, Roanoke, Va., has completed plans for the erection of a new ice-manufacturing plant, 27 x 108 ft. The machinery installation is estimated to cost $30,000. William E. Zieber is general manager.

The Black & Decker Mfg. Co., 105 South Calvert Street, Baltimore, manufacturer of machine shop equipment, electric appliances, etc., will take bids early in May for an addition to its plant at Towson. A. G. Decker is head.

Miller-Nelson, Inc., Belair Road, Baltimore, manufacturer of concrete products, will build an addition to cost about $25,000. Improvements will also be made in the present works for increased production facilities.

A vocational department will be installed in the new high school to be erected at Marion, N. C., plans for which are being prepared by E. G. Stillwell, Hendersonville, N. C., architect.

The Common Council, Millen, Ga., is planning for the

erection of an addition to the municipal electric power plant. New engines, generator, pumps and auxiliary equipment will be installed. Lawrence Manning is city engineer.

The Georgia Ice Co., 431 Harmon Street, Savannah, Ga., is planning for enlargements in the former ice-manufacturing plant of the Savannah Beverage & Ice Co., recently acquired, including the remodeling of the present building. The capacity will be increased to about 350 tons per day.

The City Council, Harrisonburg, Va., has approved a bond issue of $100,000, about $60,000 of which will be used for the construction of an auxiliary electric generating plant, supplementing the existing municipal hydroelectric power plant on the Shenandoah River. Plans will be prepared at once.

William Hege, Winston-Salem, N. C., is organizing a company to establish a plant to manufacture wireless equipment and radio sets.

## Cincinnati

CINCINNATI, April 17.

With some manufacturers business so far this month has been very fair, while with others it has been quiet. Inquiries, however, continue to come in at a moderate rate, but most of the deals closed are for used machines. Small tools are in fair demand and garage lathes are particularly active. A local manufacturer has been averaging one small tool each day, but during the week secured an order for 25. Special machinery manufacturers report business much improved. At present stocks of tools seem to be somewhat broken and a local concern put on approximately 100 men to build machines to complete its stock. An Indiana manufacturer was a purchaser of machine shop equipment the past week, taking 12 tools. Orders for individual machines were also fairly numerous. Railroads are not purchasing, but manufacturers are looking for good business from this source in a short time. The Ohio Cash Register Co., Dayton, Ohio, is in the market for punch presses, screw machines, profiling machines and multiple spindle drills, and will likely make immediate purchases. More encouraging news is heard from the export trade and local manufacturers have been in receipt of inquiries and orders from the Far East, with an occasional order from European countries. The new tariff of 35 per cent on machine tools is expected to be of some benefit to the industry in this country, but under present conditions manufacturers are not particularly concerned over foreign competition.

The organization of the Ohio Cash Register Co., Dayton, Ohio, has been completed. G. M. Lingham is president; W. M. Carroll, vice-president and works manager; John J. Schwartz, treasurer; E. J. Hanbuch, secretary, and C. E. Bleicher, chief engineer. The company for the present will be located in the plant of the Carroll Engineering Co., but when production reaches its maximum, more space will be necessary. It is in the market for punch presses, screw machines, profiling machines, multiple spindle drilling machines, gray iron castings and small drop forgings.

## Buffalo

BUFFALO, April 17.

McKaig-Hatch, Inc., 1584 Niagara Street, Buffalo, manufacturer of drop forgings, etc., has awarded contract to Crooker & Carpenter, Niagara Life Building, for a one-story machine shop, 50 x 120 ft., on Skillen Street.

A merger has been effected between the Pierce Arrow Motor Car Co., Elmwood Avenue, Buffalo, and the Lafayette Motors, Inc., Mars Hill, Indianapolis, with the two companies to retain, practically, their present identities and line of production. The body manufacturing department at the Buffalo plant will be given over in the future to production for both cars, and extensions will be made in facilities as required. A new company is being organized as a holding organization and plans will be perfected at an early date for expansion in manufacture. Charles W. Nash, president of the Lafayette company, and also head of the Nash Motors Co., Kenosha, Wis., will become chairman of the board of the new organization.

The Richardson & Boynton Co., 260 Fifth Avenue, New York, manufacturer of furnaces, heaters, etc., is planning for extensions in the former plant of the W. A. Case & Son Mfg. Co., Kensington Avenue, Buffalo, recently acquired. The present plant consists of three main buildings on a 12-acre site, and will be devoted to the manufacture of stove flanges, fittings, etc., operating in conjunction with the main plant at Dover, N. J. The proposed extensions will more than double the present capacity.

The Wright-Hibbard Electric Truck Co., Buffalo, has acquired the plant of the Collins Iron Co., Phelps, N. Y., and will remodel it to manufacture electrically operated industrial trucks.

Morrey & Co., 42 Cortland Street, Rochester, N. Y., manufacturers of roofing products, have plans under way for a new one and two-story plant, 58 x 86 ft., at Exchange and Glasgow streets. Hutchinson & Strutz, Cutler Building, are architects.

Robert E. Williams, Buffalo, has acquired property at 303-13 Grote Street and has plans under way for the erection of a one-story factory, 55 x 121 ft., to manufacture light metal products.

The G. A. Smith Co., State Street, Lowville, N. Y., will install new machine tools and other equipment in its machine shop.

The County Board of Supervisors, Buffalo, has authorized the preparation of plans for the erection of a group of buildings at the penitentiary, to include a number of mechanical shops. William J. Beardsley, Poughkeepsie, N. Y., architect for the present penitentiary buildings, is expected to prepare plans.

The United States Gypsum Co., Oakfield, N. Y., has had plans prepared for additions to its local plant, including a main building, 50 x 600 ft., and roofing tile factory extension, 50 x 100 ft., to cost in excess of $100,000, including equipment.

G. Adams, Buffalo, has leased a building at 124 Hickory Street for the establishment of an automobile machine and repair works and acetylene welding plant.

W. J. Maney, Naples, N. Y., is planning for the establishment of a factory to manufacture wire handles.

The Tobin Sash Co., Canandaigua, N. Y., will equip its plant for electric operation and install motors, controlling equipment, etc.

The Domex Co., Buffalo, manufacturer of metal parts and specialties, has leased a building at Akron, N. Y., for the establishment of new works. A special department will be installed to manufacture automobile radiators and kindred products, heretofore made by the Kaman Auto Radiator Co., Akron. It is proposed to remove the Buffalo plant to the new location.

Work has begun on the addition to the Gates plant of the Yawman & Erbe Mfg. Co., Rochester, N. Y., manufacturer of office furniture and devices. It will be three stories and basement and provide 100,000 sq. ft. of extra floor space and is estimated to cost $400,000. When completed the company will dispose of its works on St. Paul Street and concentrate all of its operations in the Gates plant.

## Cleveland

CLEVELAND, April 17.

Local machine tool dealers and manufacturers continue to book a fair volume of orders, mostly for single machines. Inquiries have become more plentiful. The Lake Erie & Western Railroad, through the purchasing department of the New York Central lines in Cleveland, has issued a new list of about 15 machines, all but two of which are woodworking tools.

The Cleveland Board of Education is preparing a new list which will include a large amount of equipment, mostly metal-working, for the new Collinwood manual training school. It is stated that a greater amount of equipment will be required than has been provided in any of the city's present technical high schools. Orders against the lists recently issued by the Board of Education have not yet been placed. Dealers are getting orders for drill presses, small lathes, bench drills and other tools from companies starting the manufacture of radio equipment. Detroit automobile manufacturers have become active buyers of machine parts. The American Steel & Wire Co., Cleveland, the past week placed an order for one machine and put out a new inquiry for a milling machine.

The Niagara Machine & Tool Co., Buffalo, has announced price reductions from 10 to 20 per cent on its lines of presses and shears.

The list of the Lake Erie & Western Railroad includes a radial drill and a bolt cutter and the following woodworking machinery:

Four cut off saws.
Two mortisers.
One 24-in. rip saw.
One band saw, filler and setter, with brazing attachment.
One 25-in. rip saw.
One band saw with 36-in. wheel.
One 14-in. universal rip and cross cutting saw.
One planing and matching machine for 24-in. stock.
Two three spindle vertical No. 2 boring machines with capacity up to 3½-in.
Four motors ranging from 5 to 15-h.p.

The Murdock Dishwashing Machinery Co., Marion, has been organized by men from Bucyrus and Marion, Ohio, with a capital stock of $250,000 to manufacture power-driven dishwashing machinery and has acquired the factory formerly

occupied by the Houghton Sulky Co. at Marion. H. A. McKinnon is president and manager; Millard Hunt and C. A. Murdoch, vice-president; Fred Scherff, secretary and E. B. Fidler, treasurer.

The Kerscher Elevator Co., Toledo, Ohio, manufacturer of freight and passenger elevators, has placed contract with the H. J. Spieker Co., Toledo, for the erection of a two story brick and concrete addition to cost approximately $120,000.

The Lincoln Motor Body Co., Toronto, Ohio, has been formed with a capital stock of $50,000 to manufacture motor bus bodies, cabs, trailers, etc. It will be under the management of Arnold Davis.

The Pneumatic Disc Wheel Co., Richmond, Va., has purchased the Wooster, Ohio plant of the Kelly-Springfield Rubber Co., and proposes to place it in operation about July 1 for the manufacture of disk wheels for automobiles.

The Fremont Motor Corporation, Fremont, Ohio, has purchased the plant and business of the All American Motor Co., Chicago, and is moving the equipment to Fremont.

W. B. Rosevear and other Toledo men are contemplating the erection of a cold storage plant to cost $300,000.

## The Central South

St. Louis, April 17.

The Ashland Fire Brick Co., Ashland, Ky., will make extensions and improvements in its plant and install additional machinery. The steam dryer department will be remodeled. E. H. Gartrell is general manager.

The William C. Knauth Electric Co., 113-15 West Market Street, Louisville, manufacturer of motor parts and other electric power equipment, has acquired property adjoining its plant. The building will be remodeled for general manufacture, providing a total plant area of 50,000 sq. ft.

The Holston River Power Co., Johnson City, Tenn., recently organized, is planning for the construction of two hydroelectric generating plants on the Holston and Watauga rivers, with total capacity close to 90,000 hp. James B. Cox, Johnson City, heads the company.

A vocational department will be installed in the new three-story and basement high school to be erected at Lockwood, Mo., plans for which are being prepared by Charles H. Sudhoelter & Co., 715 Joplin Street, Joplin, Mo.

The American Foundry & Mfg. Co., Kansas City Life Building, Kansas City, Mo., will hold in temporary abeyance the erection of its proposed one-story plant, 90 x 140 ft., at Manchester and Eighteenth avenues, designed for the manufacture of stoves, heaters, etc. It is estimated to cost about $35,000. Wilkinson & Crans, 608 Interstate Life Building, are architects. H. H. Akers is general manager.

The Board of Works, Memphis, Tenn., will build a power house and electrically operated pumping plant in connection with a filtration plant and other improvements in the waterworks. The installation will comprise centrifugal pumps, air compressors, turbines, pumping engine, etc. The entire project will cost in excess of $1,000,000. Bids will be asked in June. Fuller & McClintock, 421 Produce Exchange Building, Kansas City, Mo., are engineers.

The Oklahoma General Power Co., Muskogee, Okla., organized under State laws, is disposing of a bond issue of $2,750,000, the proceeds to be used for the erection of a new steam-operated electric generating plant and construction of a high-tension transmission line. The company is operated by the Byllesby Engineering & Management Corporation, 208 South La Salle Street, Chicago.

A vocational department will be installed in the two-story and basement high school to be erected by the Board of Education, Memphis, Tenn., at Buntyn, estimated to cost about $85,000.

The Oklahoma Power Co., Tulsa, Okla., will commence the immediate construction of an addition to its electric generating plant on the Arkansas River, near Tulsa, to provide for an increase of about 10,000 kw. in capacity. The company is a subsidiary of the American Public Service Co., Tulsa.

The Lion Oil & Refining Co., 622 Finance Building, Kansas City, Mo., is planning for the installation of new equipment at its plant. V. H. Smith is secretary.

A vocational department will be installed in the two-story and basement high school, 95 x 144 ft., to be erected at Skiatook, Okla., estimated to cost close to $100,000. A. J. Love & Co., 205 Richards Building, Tulsa, Okla., are architects.

The Tennessee Eastern Electric Co., Johnson City., Tenn., has acquired property at Watauga, Tenn., and has preliminary plans under way for a steam-operated electric generating plant to supplement its present power station.

Freight-handling and conveying machinery, industrial trucks, etc., will be installed in the one-story terminal, 125 x 400 ft., to be erected by the Columbia Terminals Co., 400 South Broadway, St. Louis, estimated to cost about $150,000. Wedemeyer & Nelson, Wainwright Building, are architects. L. W. Childress, president.

A vocational department will be installed in the two-story and basement high school at Stockton, Kan., estimated to cost approximately $100,000. Mann & Gerow, Rorabaugh-Wiley Building, Hutchinson, Kan., are architects.

The Tennessee Railway, Light & Power Co., Chattanooga, Tenn., and the Chattanooga & Tennessee River Power Co., of the same city, are being merged into a new company to be known as the Tennessee Electric Power Co. The new organization has preliminary plans under way for extensions in power plants and improvements in lines.

The Nashville Pulp & Paper Co., Jacksonville, Tenn., has preliminary plans nearing completion for additional units to its plant at Old Hickory estimated to cost in excess of $500,000.

## Indiana

INDIANAPOLIS, April 17.

The Hartford Foundry & Machine Co., gray iron castings, Hartford City, Ind., will start work within the next 30 days on a new foundry, 40 x 80 ft., to include new cleaning and core rooms, air compressor, sand blast rooms and core ovens. Included in the equipment to be bought will be a 5-ton traveling crane, air compressor, sand blast and molding machines. W. F. Lange is vice-president.

The Bucyrus Co., Decker Road, Evansville, Ind., manufacturer of steam shovels, etc., has awarded contract to John Pritchard & Co., 1011 South Seventh Street, for a two-story machine shop addition, 120 x 200 ft.

The Petersburg Lock Rim Co., Petersburg, Ind., manufacturers of metal luggage carriers for automobile service and kindred products, will build an addition, 30 x 70 ft.

A vocational department will be installed in the two-story and basement high school, 125 x 140 ft., to be erected at Chesterton, Ind., estimated to cost about $200,000. Bids will be asked before the close of April by Herbert E. Erickson, 17 Fifth Avenue, Gary, Ind., architect.

A vocational department will be installed in the new one-story and basement high school to be erected at Hagerstown, Ind., 100 x 130 ft., and estimated to cost close to $100,000. C. E. Werking & Son, Palladium Building, Richmond, Ind., are architects.

Fire, April 14, destroyed a portion of the plant of the Standard Oil Co., Whiting, Ind., with loss estimated at about $150,000, including 10 steel stills, machinery, etc.

The Scoria Mfg. Co., Indianapolis, temporarily located at the factory of the Broad Ripple Fuel & Supply Co., has plans under way for new works at Sixty-third Street and the Monon Railroad to manufacture cement blocks, tile, etc., estimated to cost $50,000. Charles T. Hornaday is vice-president and treasurer, and William T. Anderson, secretary.

The Monroe Automobile Co., Indianapolis, has been incorporated with a capitalization of $500,000. William Small is president and general manager, and J. H. O'Brien, vice-president. The company is the successor to the William Small Co. which formerly manufactured the Monroe car. It has plants in West Eleventh Street and Fulton Street and a sales and service building at Capital Avenue and North Street. In addition to the two officers the directors are F. A. King, J. C. F. Martin, and H. H. Alexander.

The Frontenac Motor Co. of America, Inc., 37 Wall Street, New York, has bought the former plant of the Federal Motor Co., at Fifteenth Street and the Big Four Railroad, Indianapolis, and will at once equip it to manufacture the Frontenac automobile. It was recently incorporated under Delaware laws with $1,000,000 capital stock. Allan A. Ryan is chairman of the board of directors and William N. Thompson, president Stutz Motor Car Co. of America, Indianapolis, is associated with Mr. Ryan. The company has been occupying temporary quarters at 410 West Tenth Street, Indianapolis.

The American Bearing Corporation, Indianapolis, has purchased a plant, 60 x 200 ft., at Tenth Street and the Canal, for $30,000. It is a reorganization of the American Bearing & Die Casting Corporation. Arthur Dixon is president; William Fletcher, vice-president, and Paul J. Moore, secretary-treasurer.

## The Gulf States

BIRMINGHAM, April 17.

The Vulcan Iron Works, Galveston, Tex., is planning for enlargements to establishment new departments for the manufacture of oil-well tools and machinery. The plant, heretofore, has been devoted to the production of marine

equipment and this branch of the business will be continued.

The Louisiana Concrete Products Co., Washington, La., recently organized with a capital of $60,000, is planning for the erection of a factory to manufacture concrete tile, brick, etc. H. H. Holloway, Amite, La., is engineer; A. D. Alderson, Alexandria, La., is president.

Fire, April 7, destroyed the four-story works of the Menge Marine Hardware & Supply Co., Canal and St. Peters streets, New Orleans, with loss estimated at about $200,000.

The Common Council, St. Petersburg, Fla., will soon call a special election to approve bonds for $300,000 for the construction of a municipal electric power plant.

The Houston Lighting & Power Co., Houston, Tex., has arranged for an increase in capital from $2,000,000 to $3,000,000, a portion of the proceeds to be used for extensions and improvements in electric power plant and system.

A vocational department will be installed in the two-story high school to be erected at Taylor, Tex., estimated to cost $120,000, bids for which will be opened about May 1. Giesecke & Harris, Austin, Tex., are architects.

William Gilmore, Sixth Street, Meridian, Miss., is planning for the erection of a one-story machine shop and automobile repair works, 65 x 80 ft.

The Texas Ice & Cold Storage Co., Dallas, Tex., is planning for the erection of a new cold storage plant, following the erection of the ice-manufacturing plant, now nearing completion, with capacity of 140 tons per day.

The Texas-Mexia Refining Co., Mexia, Tex., recently organized, has prepared plans for a new refinery estimated to cost about $500,000, including equipment.

Fire, April 9, destroyed the wood-working plant and other mechanical departments at the works of the Starbuck Remilling Co., Tampa, Fla., with loss estimated at $30,000.

The Citizens Light & Power Co., New Orleans, recently organized with a capital of $2,000,000, will soon commence the erection of the first unit of its electric generating plant estimated to cost about $300,000. Harry K. Johnson, 822 Perdido Street, heads the company.

A vocational department will be installed in the new high school to be erected at Stamford, Tex., plans for which have been prepared by Davis S. Castle, Abilene, Tex., architect.

An electrically operated pumping plant will be constructed by the City Council, Childress, Tex., in connection with extensions and improvements in the waterworks.

A. E. Killibrew Newton, Ala., is organizing a company to construct and operate a hydroelectric generating plant on the Choctahatchee River, near Ozark, Ala., with distributing system in this district.

The General Motors Truck Co., Pontiac, Mich., manufacturer of motor trucks, has arranged for the establishment of a factory branch at Dallas, Tex. H. A. Neill will be in charge.

The G. R. Mueller Co., Brown-Marx Building, Birmingham, is making inquiries for two 10-ton electric traveling cranes, 60½ ft. span, new or second-hand.

Don A. Carpenter & Co., 303 San Francisco Street, El Paso, Texas, are in the market for second-hand equipment as follows for a customer in Mexico: Two steam plants to operate large centrifugal pumps. One of the plants is to consist of a 200-hp. non-condensing simple Corliss engine complete with water tube boiler plant and the other to consist of 125-hp. non-condensing simple Corliss engine complete with boiler plant.

## Milwaukee

MILWAUKEE, April 17.

The machine-tool trade is increasing slowly but steadily, and inquiry the past week has been probably the most active in five or six months. Purchases are gradually assuming volume, but the demand is largely for replacement. The automotive industries are taking some milling machines, giving this division of trade a greater semblance of activity than it has experienced in more than a year. Production remains at a low ebb, however. Manufacturers of passenger cars are enlarging their output and prospects of a wider demand for equipment from this source are excellent. The automotive industries appear to be the most promising of any metal trade lines. The demand for power farm operating equipment is improving and foundry operations have established good gains in the last few weeks.

The S. Heller Elevator Co., 250 Milwaukee Street, Milwaukee, builder of freight and passenger elevators, has let the general contract to H. Schmitt & Son, Inc., 430 Farwell Avenue, for its new plant, 60 x 120 ft., part three stories and basement.

The Safety Traffic Light Mfg. Co., Milwaukee, has been incorporated with a capital stock of $100,000 to manufacture automatic traffic controlling devices. The incorporators are T. S. Lawrie, 1614 Grand Avenue; John C. Warner, and Walter W. Lange, 593 Atwater Road, president South Side Malleable Casting Co., and secretary-treasurer Crucible Steel Casting Co., Milwaukee. Arrangements for production are now being made.

The LaCrosse Wash Machine Co., LaCrosse, Wis., has been organized with $20,000 capital by Henry R. Sauer, Emil Brubach and J. George Schweitzer, who intend to lease or build a factory and manufacture manual and power washing machines and other domestic appliances and devices.

W. J. McGinnis, Green Bay, Wis., has broken ground for a public garage and service building of reinforced concrete, 66 x 159 ft., two stories and basement, estimated to cost $45,000. The general contractor is the H. J. Selmer Co., local.

The Evan L. Reed Mfg. Co., Sterling, Ill., which lost its hardwood products and novelty factory by fire last week, expects to conclude negotiations at once with the Association of Commerce, Madison, Wis., with a view of relocating the industry in Madison. It is planned to erect a new factory equipped throughout with new machinery. Evan L. Reed is president and general manager.

The Eastern Wisconsin Electric Co., Fond du Lac, Wis., has let contract to the Fluor Brothers Construction Co., Oshkosh, Wis., to rebuild its car repair and construction shops and sheds at Oshkosh, destroyed by fire April 10 with a loss of $80,000. The machine shop adjoining was saved, although some replacement of equipment is made necessary by water damage.

The Wisconsin Radio Corporation, Madison, Wis., has been incorporated with $10,000 capital stock to manufacture radio equipment. The principals are J. H. Taylor, president Taylor Electric Co.; W. R. Muehl, 1202 East Johnson Street, and W. F. Hanson. A factory will be equipped immediately at No. 7 South Webster Street.

Peterson Brothers, Sturgeon Bay, Wis., machinists and automobile repairmen, will build a two-story machine and service shop, 50 x 85 ft.

The Griffith-Hope Mfg. Co., Milwaukee, has been granted a charter to manufacture steel and other metal products. It is capitalized at $20,000 and will specialize in automotive equipment. The principals are Ray W. Griffith, who has been general superintendent Briggs & Stratton Co., and Samuel N. Hope, assistant general manager of the same company. Their plans are not ready for detailed announcement.

The Disappearing Propeller Boat Co., Wisconsin Rapids, Wis., organized recently, is equipping a factory in leased quarters and expects to be ready to begin production May 1. It will build metal and wood hull boats of a special type, with permanent power plants and transmission.

## Detroit

DETROIT, April 17.

The Wilmarth Show Case Co., 1544 Jefferson Avenue, Grand Rapids, Mich., has completed plans for a three-story and basement addition to cost about $150,000, including equipment. O. B. Wilmarth is president.

The Durant Motor Co. of Michigan, Lansing, has awarded contract to the Christman Construction Co., Lansing, for the erection of two new units to double approximately the present capacity. A large part of the new buildings will be given over to the manufacture of the Star automobile.

The secretary of the board of regents, University of Michigan, Ann Arbor, Mich., is taking bids for the erection of a four-story building, 190 x 248 ft., to contain engineering and mechanical shops, laboratory, etc. Smith, Hinchman & Grylls, 710 Washington Arcade, Detroit, are architects.

The E-Z Way Sprayer Co., Detroit, with temporary office at 129 Beaconsfield Avenue, is negotiating for a site for a new plant to manufacture water spraying equipment and devices. The company was organized recently under State laws and is headed by D. M. and M. F. Langworthy.

The Detroit Edison Co., Detroit, has plans under way for a one-story power house on Scotten Avenue.

The Reynolds Spring Co., Jackson, Mich., is arranging for increased production, following the closing of a contract with the DeForest Radio Telephone & Telegraph Co., New York, for radio equipment, totaling approximately $5,000,000. About 500 men will be added to the working force as soon as facilities are provided.

The Consumers Power Co., Jackson, Mich., will soon have superstructure work in progress for rebuilding its electric power plant at Rogers, Mich., recently destroyed by fire. It will be two stories and is estimated to cost about $400,000.

The Earl Motors, Inc., Jackson, Mich., has been reorganized to provide for financing and increased production. It is proposed to give employment to about 1000 operatives, includ-

ing a night shift. Clarence A. Earl is president and L. S. Wescott, treasurer.

The Munising Motor Co., Munising, Mich., will build a one-story addition to its service and repair building, 50 x 142 ft.

The Kendell Engineering Corporation, Fort Wayne, Ind., recently organized, will take over the plant and business of the Kendell Engineering Co. Manufacture of piston rings and kindred products will be continued. The new company is headed by Charles A. Kendell, president, and M. W. Cartwright, secretary and treasurer.

## The Pacific Coast

SAN FRANCISCO, April 11.

The Magnolia Metal Co., Pacific Building, San Francisco, is having plans drawn for the erection of a one-story reinforced concrete addition to its plant. Dodge A. Riedy, Pacific Building, is architect.

The Pacific Sanitary Mfg. Co., Fifth and Hensley streets, Richmond, Cal., has filed plans for an addition to cost about $60,000.

The Pacific Fruit Express Co., 65 Market Street, San Francisco, a subsidiary of the Southern Pacific Railroad, has plans nearing completion for the construction of a new ice manufacturing and railroad car pre-cooling plant at Bakersfield, Cal., to cost about $400,000, including machinery.

The Pacific Mfg. & Electric Co., Los Angeles, is planning for extensions, to include a new department for the manufacture of wireless receiving equipment.

A vocational department will be installed in the new high school to be constructed by the Napa Union High School District, Napa, Cal., for which a 40-acre tract of land has just been acquired. The structures will cost in excess of $350,000.

The National Ice & Cold Storage Co., Gerber, Cal., will build a new ice manufacturing and refrigerating plant with initial capacity of about 65 tons per day.

The National Axle Co., San Jose, Cal., is selecting a site at Long Beach, Cal., for a new plant, estimated to cost $300,000, including machinery.

Conveying machinery, endless belts, electrical and mechanical equipment will be installed in the series of packing plants to be constructed by the Sun Maid Raisin Association, Fresno, Cal., estimated to cost in excess of $700,000.

The Brea Tool Works, Brea, Cal., recently organized, has acquired property at Olinda Boulevard and Redwood Street as a site for its proposed factory. Plans will be prepared at once. W. J. Travers and A. D. Yost head the company.

The Puritan Ice Co., Santa Barbara, Cal., recently incorporated with a capital of $150,000, has acquired property for a new ice-manufacturing plant estimated to cost close to $80,000. L. R. Phillips and T. Paul Dalzell, Santa Barbara, head the company.

The Salt River Valley Water Users' Association, Phoenix, Ariz., has tentative plans for the construction of new hydroelectric generating plants to supplement the present power plant at the Roosevelt Dam. The project is estimated to cost in excess of $600,000.

The Boise Cold Storage Co., Boise, Idaho, will make extensions and improvements in its ice and cold storage plant to cost about $50,000. New equipment will be installed.

The Union Oil Co. of California, Union Oil Building, Los Angeles, has plans under way for a new distributing plant at Baker, Ore., to cost about $50,000. Property has been acquired at H and Chic streets.

The Tacoma Fir Lumber Co., Canal and West Eleventh streets, Tacoma, Wash., is planning to rebuild the portion of its plant recently destroyed by fire, with loss estimated at $55,000, including equipment.

The Capital Ice & Cold Storage Co., Salem, Ore., has completed plans for a new ice manufacturing plant to cost about $75,000.

A vocational department will be installed in the new high school to be erected at Seattle, Wash., estimated to cost $725,000.

The City Council, Bonners Ferry, Idaho, is arranging for a bond issue for the construction of a new municipal electric power plant at Moyea.

## Canada

TORONTO, April 17.

The demand for practically all lines of equipment continues active and dealers state that sales for the month of March were about 20 per cent ahead of those in February and that even a greater improvement is looked for this month. Buying, however, is limited and big lists have been scarce for several months, but inquiries are more numerous and give signs of developing into orders shortly. Second-hand and re-built lines are moving in fair volume, but it is expected that the early future will see buyers turning from the second-hand tool market to the new, sales of the latter now showing improvement. The demand for small tools is holding up. During the week a reduction of 10 per cent was announced in the price of carbon and high speed drills; on the other hand, however, a slight increase is announced in the price of grinding wheels.

Carr & Garrick, 148 Victoria Street, Sarnia, Ont., are in the market for an air compressor.

The Kelsey Wheel Co., Windsor, Ont., is in the market for a 175 to 250-hp., three phase motor.

The Wettlaufer Foundry Co., Mitchell, Ont., is in the market for equipment for a proposed foundry.

The B. & L. Laboratories, Aylmer, Ont., will erect a manufacturing plant and are interested in prices and information on equipment.

The Frontenac Foundry Co., 388 Carrier Street, Montreal, is in the market for equipment for a foundry to be erected on Latailleur Street.

The Provincial Paper Mill, Port Arthur, Ont., is in the market for 73 book machines capable of turning out 15 tons of paper per day.

C. Little, 343 Richmond Street, London, Ont., will build an arena at a cost of $150,000 and is asking for prices on artificial ice-making equipment.

R. H. Cunningham & Co., have temporary premises at 351 Glebe Street, Walkerville, Ont., and will manufacture furnaces, heating equipment, etc.

The Wabash Railway Co., will erect locomotive repair shops at St. Thomas, Ont., to cost $500,000.

An Eastern syndicate in which J. J. Herd, New Westminster, B. C., is interested, proposes to erect a paper mill at New Westminster to cost $100,000.

The town of Coleman, Alta., plans the installation of new electric light and power equipment. James Ford is secretary-treasurer.

Cardinal & Beauchamp, architects, 26 St. James Street, Montreal, are receiving bids for the erection of a power house at Lachine, Que., to cost $22,000.

T. Bellefleur and Charles Skinner, Willow Bunch, Sask., will install a generator and equip an electric lighting plant there.

The Trenton Hardwood Flooring, Ltd., Trenton, Ont., recently incorporated with a capital stock of $49,000, will establish a plant for the manufacture of hardwood flooring, etc. The officers are : W. A. Fraser, president; R. A. R. Allen, secretary-treasurer, and J. B. Morgan, director.

The John Inglis Co., Strachan Avenue, Toronto, has been incorporated with a capital stock of $1,000,000 by George M. Huycke, Norman E. Strickland, Arthur Kelly and others. It is at present operating a foundry and machine shop and intends building an addition to its machine shop.

## Trade Changes

The Elk River Coal & Lumber Co., Dundon, W. Va., has appointed L. M. Humrichouse Eastern sales manager, with offices at 2025 and 2026 Land Title Building, Philadelphia; and states that hereafter its Dundon low sulphur gas coal will be sold direct instead of through Ernest Law & Co.

The Combustion Engineering Corporation, New York, arranged with the Power Plant Equipment Co., Kansas City, Mo., to represent it in that territory which covers, in a general way, eastern Kansas, eastern Nebraska, western Arkansas, and western Missouri. This district was taken over by the Power Plant Equipment Co. March 1, 1922. The company's Kansas City address is 1002 Coca-Cola Building.

The Tidewater Steel Corporation, New York, has severed its connection as sales agents for the Nagle Steel Co.

The Zeller Lacquer Mfg. Co. has taken additional office space in the Canadian Pacific Building, 342 Madison Avenue, New York. A stock of standard grades of Zeller lacquer in the smaller containers will be carried.

The Chicago Sales office of the Whiting Corporation has moved from 1245 Marquette Building to 945 Monadnock Building. Telephone Harrison 1252.

The McCabe & Sheeran Machinery Corporation, new and used tools, will move from 149 Broadway to room 482 at 50 Church Street, New York, on April 20. It will occupy the offices formerly occupied by the Graves Machinery Co., which will remove its office to the warehouse and machine shop at Johnson Avenue and Monitor Street, Jersey City.

The office of the Chicago Bridge & Iron Works has removed from the Old Colony Building to the Transportation Building.

# NEW TRADE PUBLICATIONS

**Portable Steel Derrick.**—Leaflet showing numerous applications for both inside and outside work of the Taylor portable derrick, made by the Taylor Portable Steel Derrick Co., 213 West Grand Avenue, Chicago. It is shown used with motor trucks, with railroad cars and in factory use.

**Una-Flow Engine.**—Leaflet issued by Lefax, Philadelphia, in the interest of the Stumpf Una-Flow Engine Co., 206 East Genesee Street, Syracuse, N. Y., illustrating both the horizontal and vertical type of the engine in which the steam goes through the cylinder in one direction only, thus to minimize the loss through cylinder condensation. A cross-section of the cylinder is shown together with a comparison of the indicator card of the Una-Flow engine with that of a compound engine.

**Dump Bodies.**—Way Products Co., Lansing, Mich. Describes, illustrates and quotes delivered prices on the steel and semi-steel dump bodies manufactured by this company.

**Jacks.**—Templeton, Kenly & Co., Ltd., 1220 South Central Avenue, Chicago. A 24-page booklet dealing with the principles of operation of jacks. Various parts are described and illustrated by cross-section drawings. Single and double action jacks for mine and industrial use are shown, as well as automobile, motor truck and track and ballast jacks. A table of export data showing the most efficient methods of packing jacks for export shipment is given.

**Coated Nails.**—Richard Staack Lead Coating Works, Homestead, N. J. A small circular describing this company's method of coating nails, screws, bolts and nuts with hot lead, as a preventive of corrosion and rust from moisture and acid fumes.

**Locomotives.**—H. K. Porter Co., Union National Bank Building, Pittsburgh. Catalog is devoted to descriptions and illustrations of the Porter fireless steam locomotive. The locomotive, which is without boiler and firebox, has instead a tank containing water, heated by steam from a suitable stationary boiler. To insure dry steam the storage tank is only four-fifths filled with water. The tank of the locomotive is specially lagged and jacketed to prevent loss of heat. As the steam is used by the locomotive, the gradual drop in steam pressure induces evaporation of the remaining water. There are photographs of Porter locomotives ranging from Consolidation and Mikado types down to the smallest types of yard engines.

**Compressors for Refrigeration.**—Norwalk Iron Works Co., South Norwalk, Conn. Booklet describing various ammonia compressors and ice-making machinery from ¾ ton to 10 tons. The internal parts of the compressors are shown and cross-section views of these units are accompanied by descriptions.

**Electric Tools.**—Black & Decker Mfg. Co., Baltimore, Md. Miniature booklet illustrates and quotes prices on the line of electric drills, screw drivers, grinders, socket wrenches, cleaning machines and valve grinders manufactured by the company.

**Refractory Cement.**—"Hytempite in the Power Plant," an illustrated 20-page pamphlet issued by the Quigley Furnace Specialties Co., 26 Cortlandt Street, New York, outlining advantages of its use in many lines.

**Drop Forgings.**—Billings & Spencer Co., Hartford, Conn. Booklet of 46 pages on standard and special drop forgings and drop forging machinery. Illustrated.

**Pyrolectric Instruments.**—Pyrolectric Instrument Co., Trenton, N. J. Catalog No. 19, 56 pages. Contains illustrated description of complete line, including several new products. Price readjustments are included.

**Truck Trailers.**—Detroit Trailer Co., Detroit. Illustrated 4-page circular, describing various new trucks for freight and heavy transportation.

**Couplings.**—Kay Mfg. Co., Norwalk, Conn. Circular No. 1922. Illustrated 8-page description of the Whitney free floating couplings of various types.

**Alloy Steel Castings.**—Sivyer Steel Castings Co., Milwaukee, Wis. Illustrated 14-page pamphlet giving properties and uses of various high carbon, vanadium, nickel and chromium electric steel castings.

**Vent Valves.**—The Trane Co., La Crosse, Wis. Bulletin No. 2, particularizing on the Trane quick vent and the Trane float vent valves, which are of all-metal construction. The bulletin contains a comprehensive description of the construction and operation of these valves and is well illustrated.

**Evaporator Systems.**—Griscom-Russell Co., 90 West Street, New York. Bulletin No. 360, describing the application of evaporators to the purification of boiler feed water by distillation. This bulletin is so written that the application of Reilly evaporators, self-scaling, to the power plant for the elimination of scale, blow-down, priming, etc., can be readily understood by the non-technical executive as well as by the engineer.

**Hammer Welding.**—M. W. Kellogg Co., Jersey City, N. J. Booklet, illustrated, on Kellogg method of hammer welding, a process of making leakproof vessels for the chemical industries out of steel plate.

**Conveyors.**—Standard Conveyor Co., North St. Paul, Minn. Booklet on gravity conveyor systems for various industries, warehouses, etc.

**Firebrick.**—Ashland Firebrick Co., Ashland, Ky. Bulletin No. 103, describing firebrick for oil furnaces and illustrating by means of photographs installations of oil-burning furnaces where Ashland firebrick was exclusively used.

**Pressed Steel.**—Sharon Pressed Steel Co., Sharon, Pa. Illustrated booklet showing completeness of company's plant for manufacture of pressed steel products.

**Automatic Die Heads.**—Landis Machine Co., Waynesboro, Pa. Illustrated bulletin descriptive of the new Landis automatic die heads for application to turret lathes and screw machines, which embody, it is claimed, features not found in any other head of its type. Booklet also contains information regarding the Landis threading machine and data as to the cost of threading on a Landis threading machine.

**Steam Purifier.**—Tracy Engineering Co., 485 Sixth Street, San Francisco. Catalog No. 13, giving information regarding the Tracy steam purifier, which is designed to replace the so-called dry pipe in a boiler and is claimed to be effective in preventing moisture from leaving the drum. The Andrews-Bradshaw Co., B. J. Jones Building, Pittsburgh, has been appointed exclusive representative in the United States and all inquiries should be addressed there.

**Care of Circular Saws.**—Oliver Machinery Co., Grand Rapids, Mich. Bulletin No. 5 is for those who have to take care of circular saws or who operate circular saw machinery. The principal article is on the care of circular saws, the author being a man who has spent many years specializing in the manufacture and development of saw and knife fitting tools.

**Cutting Oil.**—Union Petroleum Co., Widener Building, Philadelphia. Bulletin describing this company's "Wilkut," a cutting oil which the company claims has proved very effective after the most exacting tests. It is claimed that the use of this oil will insure greater speeds and feeds on any machine, with longer tool life, and 100 per cent quantity and quality of production.

**Cast Iron Pipe and Fittings.**—Lynchburg Foundry Co., Lynchburg, Va. Catalog of cast iron pipe and fittings, supplemented by data as to sizes, weights, etc., of various standards. An addenda of useful information is of value to everyone engaged in purchasing or using cast-iron pipe and fittings.

**Simplex Jacks.**—Templeton, Kenly & Co., Ltd., 1020 South Central Avenue, Chicago. Bulletin No. 122, 24 pages, describing railroad, automobile and general-purpose hand-power jacks from ¾ ton to 35 tons capacity and 6½ in. to 26½ in. lift. The use of trunnions 1 in. in diameter and integral with the steel lever socket in place of fulcrum pins, square and oval lever sockets, oval hickory poles and other items are discussed in their relation to more effective use of man-power.

**Cooling Towers.**—Edwin Burhorn Co., engineer, contractor and manufacturer, 25 West Broadway, New York. Catalog No. 22, 38 pages, describing in detail two types of all-steel atmospheric cooling towers for refrigeration, cold storage, industrial power plant, gas producer plant, gas engine, central power plant and allied service. Tables give the results of operation with both "standard" and "packers" types of tower under various conditions of temperature and humidity.

**Reducing Valves.**—Atlas Valve Co., 282 South Street, Newark, N. J. 1922 hand-book containing in its 28 pages an unusual amount of information for the steam fitter and power plant engineer. It gives rules, tables, curves, data and formulas for determining the correct size and capacities of reducing valves; also for determining the capacity and flow of steam in pipes of different diameters and different losses in pressure. Other items covered by tables and sample problems are: Superheated steam, extra heavy pipe, pipe fittings, leaders to heating systems, pipe friction allowances and steam velocities.

# Current Metal Prices

**On Small Lots, Delivered from Merchants' Stocks, New York City**

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

### Iron and Soft Steel Bars and Shapes

| | Per Lb. |
|---|---|
| Bars: | |
| Refined iron bars, base price | 2.38c. |
| Swedish bars, base price | 10.00c. |
| Soft steel bars, base price | 2.38c. |
| Hoops, base price | 3.28c. to 3.38c. |
| Bands, base price | 2.88c. to 2.98c. |
| Beams and channels, angles and tees 3 in. x ¼ in. and larger, base | 2.48c. |
| Channels, angles and tees under 3 in. x ¼ in., base | 2.38c. |

### Merchant Steel

| | Per Lb. |
|---|---|
| Tire, 1½ x ½ in. and larger | 2.40c. |
| (Smooth finish, 1 to 2½ x ¼ in. and larger) | 2.60c. |
| Toe-calk, ½ x ⅜ in. and larger | 3.20c. |
| Cold-rolled strip, soft and quarter hard | 6.25c. to 7.25c. |
| Open-hearth spring steel | 3.50c. to 6c. |
| Shafting and Screw Stock: | |
| Rounds | 3.35c. |
| Squares, flats and hex | 3.85c. |
| Standard cast steel, base price | 12.00c. |
| Extra cast steel | 17.00c. |
| Special cast steel | 22.00c. |

### Tank Plates—Steel

| | |
|---|---|
| ¼ in. and heavier | 2.48c. |

### Sheets

*Blue Annealed*

| | Per Lb. |
|---|---|
| No. 10 | 3.28c. to 3.53c. |
| No. 12 | 3.33c. to 3.58c. |
| No. 14 | 3.38c. to 3.63c. |
| No. 16 | 3.48c. to 3.73c. |

*Box Annealed—Black*

| | Soft Steel C. R., One Pass Per Lb. | Blued Stove Pipe Sheet, Per Lb. |
|---|---|---|
| Nos. 18 to 20 | 3.80c. to 4.05c. | ..... |
| Nos. 22 and 24 | 3.85c. to 4.10c. | 4.25c. |
| No. 26 | 3.90c. to 4.15c. | 4.30c. |
| No. 28 | 4.00c. to 4.25c. | 4.40c. |
| No. 30 | 4.25c. to 4.50c. | ..... |

No. 28 and lighter, 36 in. wide, 10c. higher.

*Galvanized*

| | Per Lb. |
|---|---|
| No. 14 | 4.10c. to 4.35c. |
| No. 16 | 4.25c. to 4.50c. |
| Nos. 18 and 20 | 4.40c. to 4.65c. |
| Nos. 22 and 24 | 4.55c. to 4.80c. |
| No. 26 | 4.70c. to 4.95c. |
| No. 27 | 4.85c. to 5.10c. |
| No. 28 | 5.00c. to 5.25c. |
| No. 30 | 5.50c. to 5.75c. |

No. 28 and lighter, 36 in. wide, 20c. higher.

*Welded Pipe*

| *Standard Steel* | Black | Galv. | *Wrought Iron* | Black | Galv. |
|---|---|---|---|---|---|
| ½ in. Butt | —56 | —40 | ¾ in. Butt | —30 | —13 |
| ¾ in. Butt | —61 | —47 | 1½ in. Butt | —32 | —15 |
| 1-3 in. Butt | —63 | —49 | 2 in. Lap | —27 | —10 |
| 3½-6 in. Lap | —60 | —46 | 2½-6 in. Lap | —30 | —15 |
| 7-8 in. Lap | —56 | —34 | 7-12 in. Lap | —23 | — 7 |
| 9-12 in. Lap | —55 | —33 | | | |

### Steel Wire

| Base Price* on No. 9 Gage and Coarser | Per Lb. |
|---|---|
| Bright basic | 3.50c. to 3.75c. |
| Annealed soft | 3.50c. to 3.75c. |
| Galvanized annealed | 4.25c. to 4.50c. |
| Coppered basic | 4.00c. to 4.25c. |
| Tinned soft Bessemer | 5.50c. to 5.75c. |

*Regular extras for lighter gage.

### Brass Sheet, Rod, Tube and Wire

BASE PRICE

| | |
|---|---|
| High brass sheet | 16¾c. to 17 c. |
| High brass wire | 17 c. to 17¼c. |
| Brass rod | 14¼c. to 14½c. |
| Brass tube, brazed | 26 c. to 27½c. |
| Brass tube, seamless | 18½c. to 19 c. |
| Copper tube, seamless | 20¾c. |

### Copper Sheets

Sheet copper, hot rolled, 24 oz., 19½c. to 20½c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

### Tin Plates

| Bright Tin | | Coke—14-20 | | |
|---|---|---|---|---|
| | Grade "AAA" Charcoal 14x20 | Grade "A" Charcoal 14x20 | | Primes Wasters |
| | | | 80 lb. | $6.05 $5.80 |
| | | | 90 lb. | 6.15 5.90 |
| | | | 100 lb. | 6.25 6.00 |
| IC | $10.00 | $8.50 | IC | 6.40 6.15 |
| IX | 11.50 | 10.00 | IX | 7.40 7.15 |
| IXX | 13.00 | 11.25 | IXX | 8.40 8.15 |
| IXXX | 14.25 | 12.50 | IXXX | 9.40 9.15 |
| IXXXX | 16.00 | 14.00 | IXXXX | 10.40 10.15 |

### Terne Plates

8-lb. coating 14 x 20

| | |
|---|---|
| 100 lb. | $7.00 |
| IC | 7.25 |
| IX | 7.50 |
| Fire door stock | 9.00 |

### Tin

| | |
|---|---|
| Straits, pig | 33c. |
| Bar | 40c. to 44c. |

### Copper

| | |
|---|---|
| Lake ingot | 15 c. |
| Electrolytic | 14¾c. |
| Casting | 14½c. |

### Spelter and Sheet Zinc

| | |
|---|---|
| Western spelter | 6½c. to 7c. |
| Sheet zinc, No. 9 base, casks | 9½c. open 10c. |

### Lead and Solder*

| | |
|---|---|
| American pig lead | 6¼c. to 6½c. |
| Bar lead | 7 c. to 7¼c. |
| Solder, ½ and ½ guaranteed | 23c. |
| No. 1 solder | 21½c. |
| Refined solder | 18c. |

*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

| | |
|---|---|
| Best grade, per lb. | 75c. |
| Commercial grade, per lb. | 35c. |
| Grade D, per lb. | 25c. |

### Antimony

| | |
|---|---|
| Asiatic | 6c. to 6½c. |

### Aluminum

| | |
|---|---|
| No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. | 25c. to 27c. |

### Old Metals

Business has been active and values are holding firm. Dealers' buying prices are nominally as follows:

| | Cents Per Lb. |
|---|---|
| Copper, heavy crucible | 10.75 |
| Copper, heavy wire | 10.00 |
| Copper, light and bottoms | 8.25 |
| Brass, heavy | 5.25 |
| Brass, light | 4.50 |
| Heavy machine composition | 7.75 |
| No. 1 yellow brass turnings | 5.25 |
| No. 1 red brass or composition turnings | 6.75 |
| Lead, heavy | 4.00 |
| Lead, tea | 2.75 |
| Zinc | 2.50 |